GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

Date: 7/11/79

Project Title: Program for Solar Energy Meteorological Research and Training Site. (Region 3)

Project No: E-16-C02 (Sub-projects are E-21-C02/Schlag, B-495-002/Sales, G-35-C02/Metcalf, B-517-002/Fletcher)

Project Director: Dr. C. G. Justus

Sponsor: Department of Energy

Agreement Period: From 7/1/79 Until 9/29/80 (03 year only)

Type Agreement: Grant No. DE-FG05-77ET20153 (Formerly Grant No. EG-77-G-05-5604) Modification M002

Amount: $200,000 (E-16-C02 at $114,330; E-21-C02 at $24,769; B-517-002 at $5,893; B-495-002 at $43,528; G-35-C02 at $11,480)

Reports Required: Cont. Mgmt. Summary Rpt., Tech. Status Rpt., Tech. Progress Report (To be submitted by Dr. Justus under E-16-C02)

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Continuation of E-16-C01

Defense Priority Rating: N/A

Assigned to: Aerospace Engineering (School/Laboratory)

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GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date 10/27/83

Project No. E-16-C02 School/~~Lab~~ Aerospace Engr.

Includes Subproject No.(s) E-21-C02, G-35-C02, B-495, B-517

Project Director(s) Dr. C. G. Justus GTRI / ~~GTL~~

Sponsor Department of Energy

Title Solar Energy Meteorological Research and Training Site.

Effective Completion Date: 9/29/80 (Performance) 9/29/80 (Reports)

Grant/Contract Closeout Actions Remaining:

- [X] None
- [ ] Final Invoice or Final Fiscal Report
- [ ] Closing Documents
- [ ] Final Report of Inventions
- [ ] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other _____

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PROGRAM FOR SOLAR ENERGY METEOROLOGICAL RESEARCH AND TRAINING SITE (REGION 3)

Quarterly Technical Status and
Contract Management Report

C. G. Justus, Principal Investigator

Georgia Institute of Technology
Atlanta, GA 30332

January 1980

Report Period October 1, 1979 - December 31, 1979

PREPARED FOR THE UNITED STATES
DEPARTMENT OF ENERGY

DIVISION OF DISTRIBUTED SOLAR TECHNOLOGY

UNDER GRANT DEFG05-77-ET20153

Georgia Tech Project E-16-C02

1. PROJECT OBJECTIVES

This broad program of solar energy and meteorological monitoring, training, and research has the following main objectives for the proposed 5 years duration:

(1) to provide for the Southeast Region (Region 3) a set of continuously monitored and quality controlled data on solar radiation and atmospheric phenomena related to solar energy collection, conversion, and storage, and to relate these to the extensive ongoing solar energy research and engineering projects carried out by Georgia Tech and in the Southeast Region.

(2) by analysis of monitoring results at two sites (on campus, adjacent to the Georgia Tech thermal Test facility and off-campus adjacent to the Shenandoah Solar Total Energy Site), determine: a) optimum siting of solar radiation and meteorological monitoring instruments relative to solar energy systems to provide the most representative site data with the least influence from the solar collector systems, b) adequacy and representativeness for the Southeast Region of various methodologies for relating easily measured phenomena (minutes of sunshine, cloud cover, etc.) to engineering quality solar radiation data (direct, diffuse, and global insolation, etc.).

(3) to establish and maintain a training program which will allow: a) undergraduate and graduate engineering students, through elective or minor courses, to become informed in the areas of meteorology and atmospheric science as they relate to solar and wind energy, b) graduate students in the atmospheric sciences to become informed of the specific requirements of monitoring, analysis, interpretation and presentation of meteorological information related to engineering aspects of solar and wind

energy, c) professionals in various fields, through short courses and seminars, to become familiar with the new and rapidly developing aspects of solar energy engineering and technology, especially the radiation monitoring and meteorological aspects of this field.

(4) through cooperation in the 3/2 dual degree program, the National Consortium for Graduate Degrees for Minorities in Engineering and other academic programs, enhance the opportunities for minorities (especially Black American and Puerto Ricans) and women in the solar energy engineering and technology field.

(5) instrumentation and monitoring techniques research and development to enhance the engineering applicability of the solar radiation and meteorological monitoring and to provide better instructional tools through low cost instrument systems for educational purposes.

(6) to investigate, with the fixed site instruments and the portable monitoring units (PMU's), the influence of urban haze and aerosols as well as the high levels of natural turbidity which occur in parts of the Southeast region, and with the PMU's to sample the effects on solar radiation of a wide variety of geography (which spans coastal, piedmont plains, and mountainous within the Southeast region).

2. PROJECT PLAN

A. Research Approach and Definition of Tasks

The proposed project plan is divided into three major tasks, each with several subtasks, as follows:

Task 1: Solar Radiation and Meteorological Monitoring Program

This task includes acquisition, initial calibration, and installation of the solar radiation and meteorological instrumentation at the on-campus (Solar Thermal Test Facility/Wind Turbine Test Facility) site and the off-campus (Shenandoah Georgia Solar Total Energy Project) site. Existing and new instrumentation at these sites will be combined and interfaced through data loggers and magnetic tape recording into a form which can be processed, summarized, and formatted by the main campus computer (CYBER 70/74 system). Annual calibration of the instrumentation, against national standards where appropriate, will be carried out, as well as more frequent field calibration of the radiation monitoring instruments. A carefully monitored program of daily instrument inspection and routine maintenance will also be carried out. The detailed outline of the various subtasks under Task 1 is as follows:

a. Based on the proposed variables to be monitored, the Instrumentation Network Design will be laid out using equipment assigned by Georgia Tech for use on this program and additional units to be purchased with the sponsor's approval.

b. Using the preliminary network design, the Selection, Order, and Delivery will be based on recommendations made at the preliminary review meeting of all of the principal investigators.

c. Before an instrument or support unit is put into service, each piece of equipment will be examined and subjected to an Instrument Check and Certification for conformation to Georgia Tech and vendor specifications.

Instruments which fail to pass inspection will be returned to the vendor for replacement.

d. The design, fabrication, and installation of the Auxiliary Hardware which will house and/or support the instrumentation will be according to recommendations in the above articles, of the respective vendors, and to experience gained through use of similar apparatus.

e. Campus Site Modification and Preparation will be done as necessary to accomodate the new monitoring site and instrumentation.

f. The Relocation of Existing Instruments will be performed expeditiously to prevent a loss of data in the present continuous monitoring system. Exposure and operation of the solar radiation and meteorological monitoring instruments will be in accordance with criteria and guidelines published by the WMO(1971) and the IGY (1958).

g. The Instrumentation will be installed and calibrated after it is received and certified.

h. Campus Site Monitoring for the total system is scheduled to begin during the last month of Year 1, but a continuous monitoring system will have been in use for the entire period.

i. The Shenandoah Monitoring System will be used for the entire period after the "Sandia Solar Monitor System" is installed. This basic instrument package will be augmented by additional equipment. Data from the Shenandoah System will be logged on cassette tape. It will then be reformatted and merged with the campus site monitoring data on the CYBER system and put on magnetic tape.

j. Analytical Software will be developed in a standard format which will be used for all research sites. This format was selected at the project directors meeting in Washington, D. C. Data will be taken for analysis

to the CYBER 70/74 computer for transfer to the standard format and storage in this format on magnetic tape, and for transmittal of the raw and summarized data to the National Climatic Center in Asheville.

k. An Instrumentation Calibration by use of a set of special instruments or by techniques specified by the instrument vendor will be performed quarterly to verify instrument accuracy and to establish a permanent record of possible instrument degradation which would affect the acquired data.

l. At the end of each phase of the program, the set of standards would be taken to the Solar Radiation Calibration Facility in Denver, Colorado for Certification of Standard Instruments.

m. The Data Transfer to the National Climatic Center is scheduled to begin on a monthly basis at the end of Year 1 and would continue for the next 48 months. The data will also be stored at Georgia Tech.

Task 2: Solar Energy/Meteorology Training Program

This task involves development and implementation of on-campus, immediate area, and regional training. Existing graduate courses in general meteorology and boundary layer meteorology will be expanded by a new graduate course (open to seniors) in the area of meteorology for solar and wind energy. This course will include training in instrumentation, data acquisition, reduction and analysis. With the formation of an Atmospheric Sciences academic program anticipated to begin in September 1978, this academic curriculum will offer engineers and engineering technologists the opportunity to learn, as a minor or elective course basis, fundamentals of meteorology as it applies to solar energy engineering and technology. It will also allow meteorologists and atmospheric science students in the new program to interact with and learn about the engi-

neering problems and needs related to solar energy technology. This academic program and related short courses for professionals will be made available as appropriate through a unique instructional TV system to become operational at Georgia Tech in September 1978. A "traveling course" to be put on as a short course or a one quarter course at regional colleges will also be implemented. Initially this will be conducted by Georgia Tech personnel. Later, as arrangements are worked out and the local college has personnel trained to proctor or tutor the course, this will be carried via the TV system, either on a video cassette delivery basis, or if the system is developed, via a satellite TV link.

Task 3: Instrumentation and Monitoring Techniques Research

Various research and development aspects related both to the monitoring and the training program, will be carried out under this task. The location of the two monitoring sites - one on-campus within about two miles from the heart of downtown Atlanta, one at the new town Shenandoah site, about 45 miles from Atlanta - will allow evaluation of urban/rural differences, especially related to urban haze and aerosols. The exposure of the instruments adjacent to the Solar Thermal Test Facility and Wind Turbine Test Facility at Georgia Tech will allow evaluation of potential effects on temperature, moisture, and air flow near such facilities. Hence optimum locations will be evaluated for instruments near solar energy facilities, to provide maximum degree of representativeness and minimum influence from the solar energy system on the meteorological measurements. Many models have been proposed in which various meteorological and simply measured radiation parameters (sunshine hours, temperature, cloud cover, solar declination, etc.) can be used to estimate engineering quality insolation (global and direct insolation, global on inclined surfaces, etc.). Some of these methods are those of Fritz (1957), Angstrom (1956), Black et al (1954), Glover and McCulloch (1958), Sabbagh et al (1977), Liu and Jordan (1960),

Whillier (1956) Bennett (1965), Swartman and Ogunladeo (1967), Reddy (1971a, 1971b), Norris (1966), Masson (1966), Atwater (1974), Lumb (1964), L'Vova (1972), Machta (1974), Paltridge (1974), Lin (1973), and Randall et al (1977). Through NOAA (Machta, private communication) a set of linear regression coefficients is being developed for the 26 rehabilitated solar radiation data stations. Using this model, the National Climatic Center will prepare, by November 1977, solar radiation estimates for 200 stations in the U.S. These data will be put on magnetic tape in SOLMET format. The data from the on-campus and off-campus monitoring sites as well as from the 5 Southeastern sites in the new 35 site NOAA network (Riches, 1975) will be used to study regional relationships between simply monitored parameters and solar radiation data for engineering purposes. Results of the contract study resulting from the recent RFP to Perform a Solar Radiation Data Forecast and Interpolation Analysis will also be applied in this study. Emphasis will be on study of the influence of turbidity (high in parts of the Southeast region), and regional geography (which spans coastal, piedmont plains, and mountain areas). During the second and subsequent years up to three low cost portable monitoring units will be designed and built. These units will be used in the training program as instructional systems for the traveling course to regional colleges. Data from these units will also be used in the analysis of methods to relate simple measured parameters to engineering quality insolation data for the region. Other instrument and monitoring techniques for which research and development projects are envisioned will include:

a. an automatic filter changing wheel for the normal incidence pyrheliometer (to automatically switch on a 1/minute or less basis between clear, OG1, RG2, and RG8 filters),

b. circumsolar radiation with the Lawrence Berkley Labs circumsolar telescope, currently on campus and projected to remain here throughout at least a portion of this project, and

c. an automatic wide field of view camera system to provide a film record of cloud cover conditions.

3. ADMINISTRATIVE STATUS

No adminiatrative charges have been made other than discontinuance of the consultant services of J. R. Williams and J. D. Walton. Since major operations are now well established, and since they had many other pressing duties, the change was deemed beneficial for both them and the project. The project team and organization is now as shown in Figure 3.1.

4. PROGRESS TO DATE

Task 1: Solar Radiation and Meteorological Monitoring Program

a. Completed in prior period. No modifications required.

b. Completed in prior period. No modifications required.

c. Completed in prior period.

d. Completed in prior period.

e. Completed in prior period. Campus site now in full operation.

f. Completed in prior period.

g. Another re-calibration of all of the on-campus instruments was done during the quarter. Another re-calibration test is scheduled for next quarter.

h. Campus-site monitoring is now being done. Except for the usual maintenance, all instrumentation is functioning properly.

i. The Shenandoah monitoring system is now in operation. A report of the Shenandoah radiation instruments calibration report is attached.

j. The quality control program has been implemented in the real-time serial output and has been used considerably to spot check the output from the on-campus site.

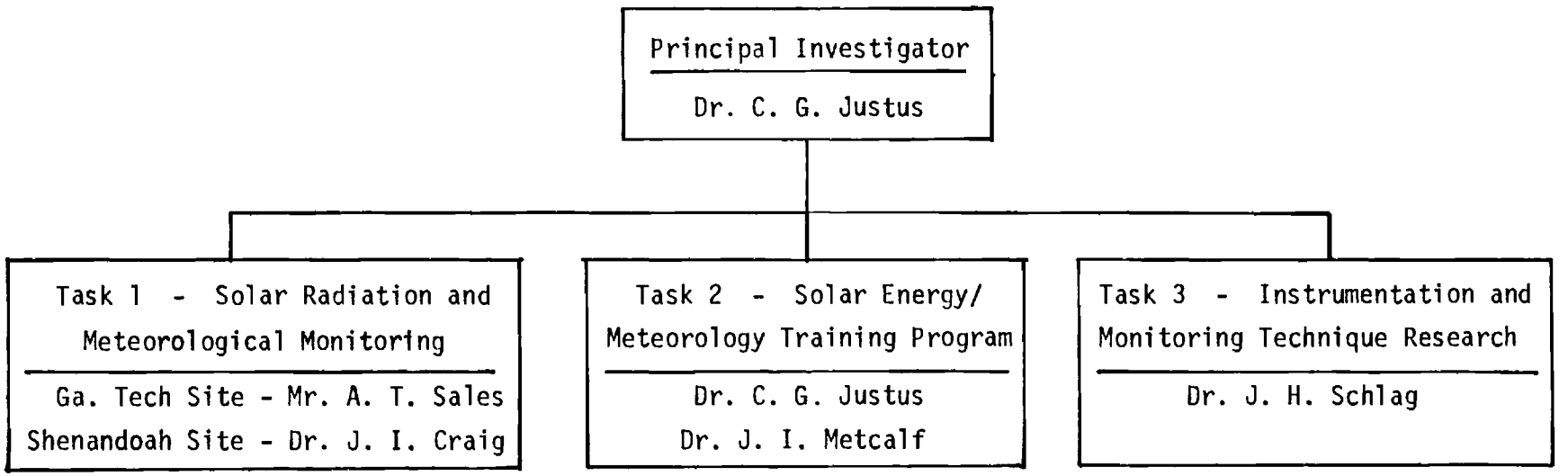


Figure 3.1 - Project Organization Chart

k. See item g, above.

l. The working standard PSP has been re-calibrated by Ed Flowers. Although originally selected for consistency of output, both from time-to-time and against the original factory calibration, this PSP showed some drift and day-to-day variation in the NOAA tests. Further comparisons and sun-shade checks against the Kendall active cavity radiometer will be done.

m. Transfer of several months of Shenandoah data to NCC is complete. Transfer of data for the on-campus site will begin as soon as the backlog of tape data is processed in the quality control program.

Task 2: Solar Energy/Meteorology Training Program

The regional solar atlas has been completed and is in the photolab for reproduction as the annual report. Copies will be distributed to interested parties within the region.

Minority training goals of this project have been expanded into a proposed NSF program in "Graduate Research Opportunities in Atmospheric and Terrestrial Sciences." A copy of the abstract of that proposal is attached. Two minority graduate Ph.D.'s from the SUNY atmospheric sciences program have been hired at Georgia Tech and an Atlanta University Center atmospheric chemist is now affiliated with the Georgia Tech program in a joint-appointment position.

Task 3: Instrumentation and Monitoring Techniques Research

The portable monitoring unit has been completed and the instruments integrated with the stands and equipment racks. Problems with the MARS data logger tape transport were noted and the unit was returned for repair. Problems with low temperature (below 32°F) operation of the MARS data logger

were noted and this unit is presently undergoing additional repair.

The all-sky camera system has been in operation for several months and is operating well. A student will begin quantitative analyses of these data shortly.

A photocell direct beam radiometer has been designed and is undergoing field tests. The automated sun photometer still awaits system component delivery.

The automatic sunshine duration recorder system integrating signals over 200 w/m^2 threshold from a NIP is now in operation. Quantitative comparisons with the Campbell-Stokes sunshine duration data will begin soon.

"Graduate Research Opportunities in Atmospheric and Terrestrial Sciences"

ABSTRACT

The addition of a new program in Atmospheric Sciences at Georgia Tech to the ongoing programs in Geochemistry, Geophysics, Engineering Geology, and Oceanography has provided a comprehensive framework for carrying out interdisciplinary and multidisciplinary research on the effect of man's activities on the atmosphere, earth, or ocean. This new academic effort has set for itself several basic important goals. Among these are the development of a strong graduate research and training program which incorporates atmospheric chemistry, dynamic meteorology, and physical meteorology. By expansion of existing cooperative programs between Georgia Tech and minority colleges such as AUC, it is expected that a graduate research capability can be established that will be uniquely responsive to regional and national needs and manpower requirements. We anticipate that the personnel and additional equipment to be provided by this grant will serve to strengthen the interdisciplinary research capabilities at Tech and thereby serve to attract students and faculty from AUC as well as other minority colleges in this region. The new research capability will be used to generate a Georgia Tech/AUC collaborative effort that can serve as a prototype project for quality graduate research and education at both institutions. It is proposed that the Georgia Tech/AUC program encompass the following activities:

(a) Joint research projects involving graduate students and faculty at both Georgia Tech and AUC.

(b) Joint utilization of research equipment from both institutions.

(c) Seminars, short courses, and other faculty-exchange between Georgia Tech, AUC, and other regional minority colleges.

As a result of the proposed program, we believe that the Georgia Tech and AUC personnel who will be participating in this project can rapidly achieve a position of prominence in relevant interdisciplinary research in the atmospheric and terrestrial sciences. At the end of the first two-year period, we would encourage a critical evaluation of the progress made in the proposed program to determine if the establishment of a joint Center for Atmospheric and Terrestrial Sciences between Georgia Tech and the Atlanta University Center is still justified.

To support the above stated program objectives, we are here requesting funds from NSF and NOAA to develop opportunities for graduate research in atmospheric and terrestrial sciences in collaboration with the Atlanta University Center (AUC).

APPENDIX A

SHENANDAOH SOLAR MET STATION

RADIATION INSTRUMENTS CALIBRATION REPORT

Georgia Institute of Technology

January 1980

ABSTRACT

During the week of October 19, all pyranometers used at the Shenandoah STES Meteorological station and several other pyranometers in our possession were simultaneously tested at Georgia Tech for cross instrument consistancy. The instruments tested were all Eppley PSPs. Georgia Tech's Epply PSP 17064 has been NOAA calibrated and was used in the test as a local standard. Graphical presentation of the data and recommended new calibration values are presented.

INSTRUMENTATION AND TEST PROCEDURE

The pyranometer comparison was carried out on 4 days in October, 1979 (19, 21, 23, 24) under conditions ranging from partly cloudy to clear weather at ambient temperatures from 70-80F. The site was a section of unobstructed roof on the instrument shelter atop the Baker Bldg. on campus. The instruments were arranged at the same height along an N-S line using a spacing of 3 ft. between units. Each instrument was mounted on a 1 x 2 ft. piece of 1" particle-board and levelled using the built-in levelling screws. Table 1 lists the instruments and the data channels used during the tests. The reference NOAA calibrated secondary standard unit was assigned to channel 0 and was located at the north end of the array. The other instruments were arranged to the south in order of increasing channel number.

The data acquisition system consisted of an HP3495 low-level reed relay input scanner (multiplexer) which connected the instrument signal leads to an HP3455 integrating (dual-slope) voltmeter. The operation and logging were controlled by an HP9825 calculator/controller and an HP59309 clock. All data were recorded in files on DC-100A tape data cartridges.

Table I. Instruments and Test Configuration

Channel	Unit	Description
0	PSP17064	NOAA Std.
1	PSP16262	Global
2	PSP17066	Tilt
3	PSP17351	Diffuse
4	PSP17059	Spectral
5	PSP15223	Shenandoah Bldg.
6	PSP15224	Shenandoah Bldg.
7	PSP15254	Spare Global
8,10	PSP16684	AE
9,11	NIP17004	Spare NIP

Table II. Weather Conditions

Day	Conditions	Data File Nos.
11/19	Overcast-to-broken conditions, 75F	14-27
11/21	Partly cloudy, breeze, 80F	28-45
11/23	Clear, light breeze, 75F	60-69
11/24	Clear, light breeze, 78F	70-92

The tests began no earlier than 11AM (EST) and ended around 5:30 PM. Data were recorded at 15 min. intervals and consisted of the average of readings taken at 1 min. intervals throughout the previous 15 min. period. Weather conditions for each of the days are summarized in Table II. During testing on the 21st, it was observed that due to strong solar absorption on the nearby roof surface, the supporting particle-board planks and the instruments themselves were increased in temperature about 20F above ambient. The instruments are all temperature compensated but it was nonetheless felt that the nonuniformity of this heating might cause problems. Consequently, for the remainder of the tests (23,24) the

supporting planks were placed on top of 1" layers of "styrofoam" insulating board and no anomolous temperatures were noted.

DATA REDUCTION

Results of the four days of testing are presented in terms of the fractional deviation of the calibration constant from the calibration constant obtained using the reference standard as an indicator of the horizontal radiation, that is

$$e = \frac{C - Cu}{C}$$

where

e = fractional deviation from NOAA standard

C = NOAA calibration unit calibration obtained by dividing the unit's measured voltage by the radiation value indicated by the NOAA calibrated PSP

Cu = unit calibration defined as the last calibration constant determined for the pyranometer being examined.

The deviation for each pyranometer tested has been plotted in the order the data was taken to examine any day to day drift and against the total solar radiation and zenith angle. These plots are shown in Figures 1-3 for the STES station instruments and Figures 4-6 for other instruments in our possession.

An examination of Figures 1-6 indicates that, for radiation values greater than 0.4 kW/m^2 and zenith angles less than 60^o, the average response of each instrument parallels that of the NOAA instrument. A computer code has been developed to determine the mean value of the deviation of each instrument. A listing of the program is given in Table III and the results in Table IV. Using the mean value of the deviation, a new unit calibration is defined as

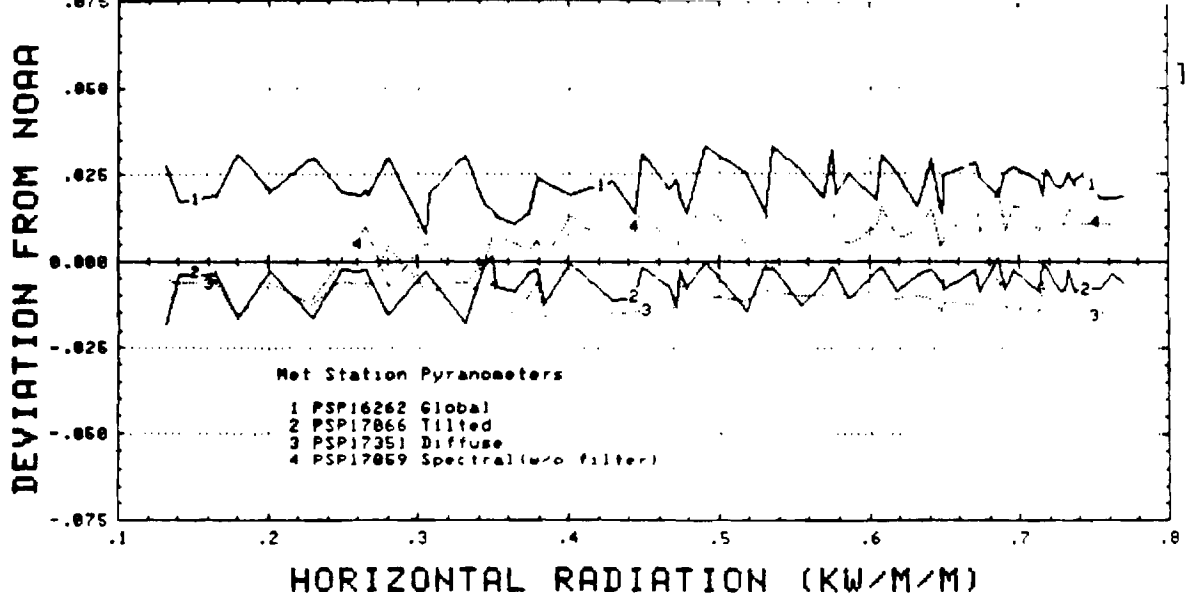


Fig. 1. Instrument Deviation as a Function of Radiation Level

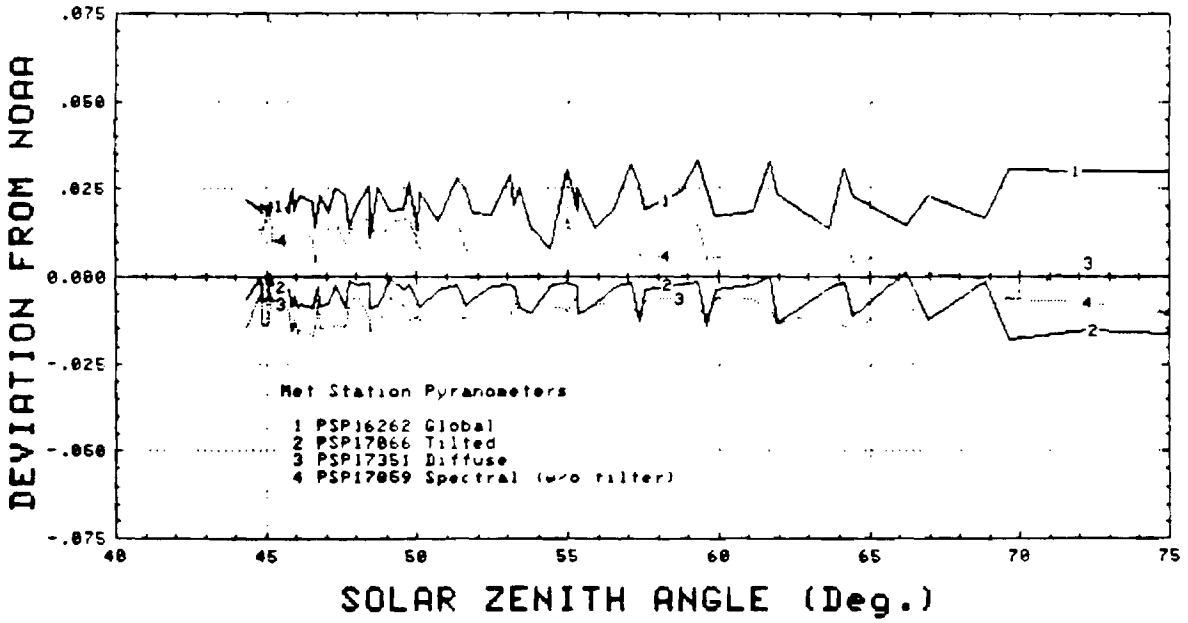


Fig. 2. Instrument Deviation as a Function of Zenith Angle

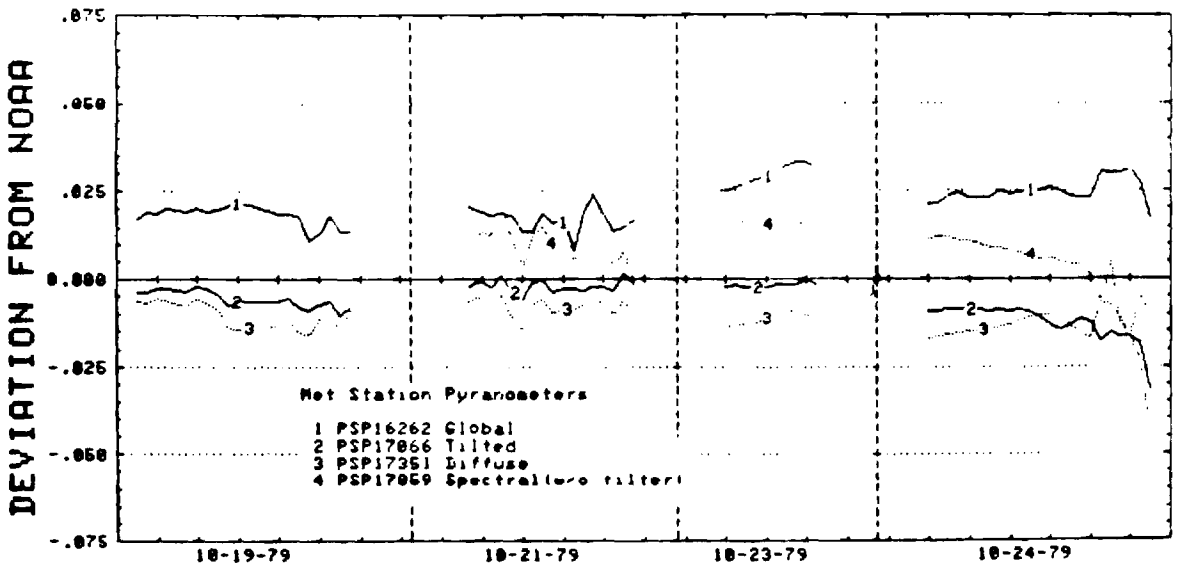


Fig. 3. Instrument Deviation as a Function of Time-of-Day

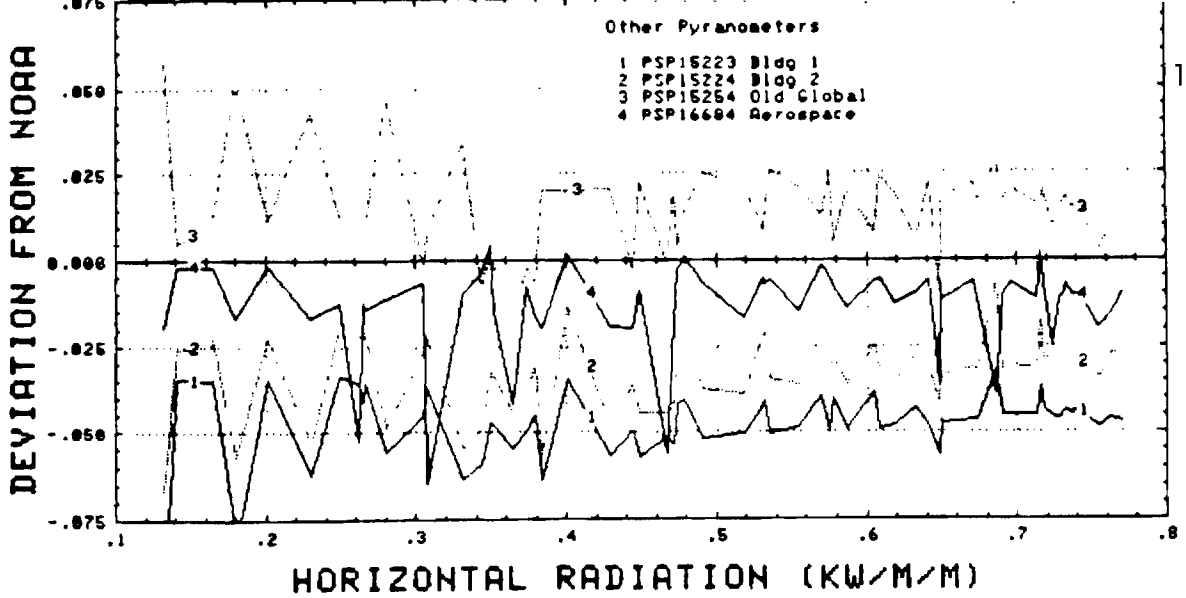


Fig. 4. Instrument Deviation as a Function of Radiation Level

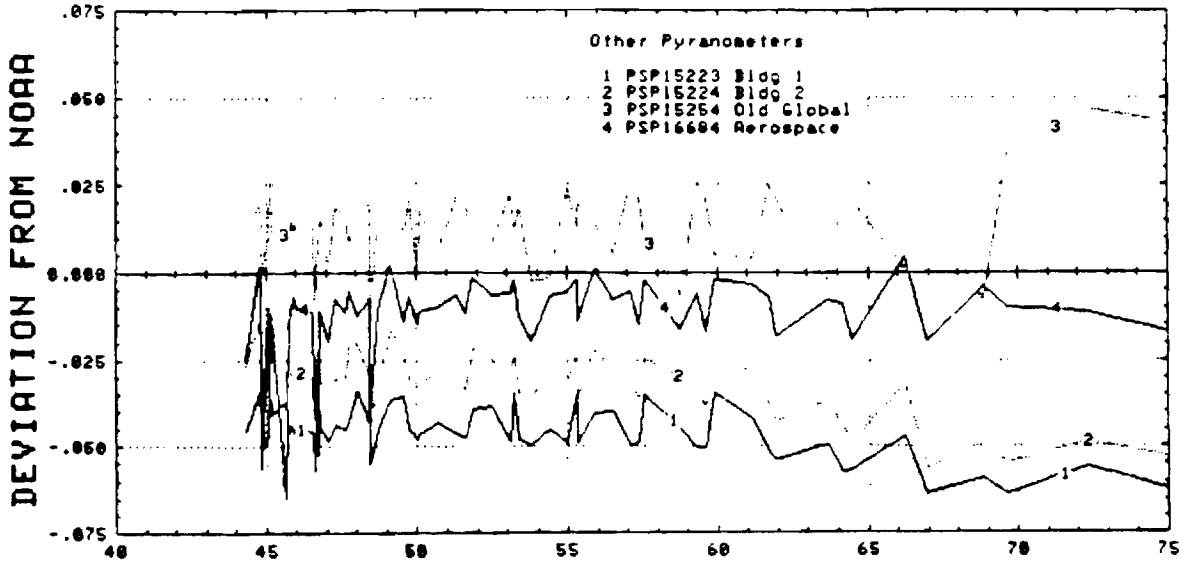


Fig. 5. Instrument Deviation as a Function of Zenith Angle

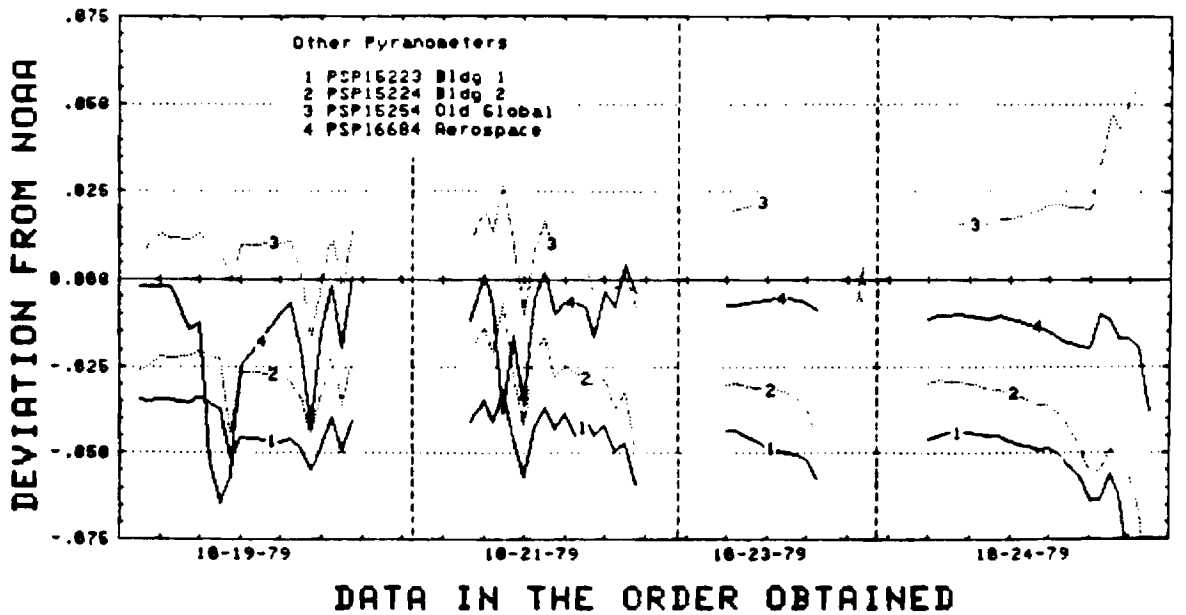


Fig. 6. Instrument Deviation as a Function of Time-of-Day

```
      PROGRAM CALCMPR(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT)
      CALCULATE (CAL(COMPARITAVE)-CAL(NOMINAL))/CAL (NOMINAL)
       AND DETERMINE ITS MEAN AND STANDARD DEVIATION
      DIMENSION VOLM(11),CNV(10),XYM(10),AMN(8),AMNSQ(8)
      DATA AMN/8*0.0/,AMNSQ/8*0.0/
      DATA CNV/9.52,10.78,9.55,9.79,9.43,9.77,9.5,10.36,9.54,8.52/

      POINTS = 0.0
      DO 40 I=1,68
      READ IN DATA FOR ONE MEASUREMENT PERIOD
      READ (5,*) DAY,HR,AMIN
      READ (5,*) VOLM
      IF(I.GT.4) VOLM (9)=VOLM (11)
      CALCULATE THE CURRENT TOTAL HORIZONTAL IRRADIANCE (KW/M/M)
      THI = VOLM(1)/CNV(1)
      PERFORM STATISTICS FOR IRRADIANCE GREATER THAN .4 KW/M/M
      IF(THI LT.0.4) GO TO 40
      POINTS = POINTS + 1.0
      DO 20 J=2,9
      STORE NOMINAL CALIBRATION FOR JTH INSTRUMENT
      CN = CNV(J)
      IGNORE DATA TAKEN WITH RG-2 FILTER
      IF ((DAY.LE.19) AND.(J.EQ.5)) GO TO 20
      CALCULATE COMPARATIVE CALIBRATION
      CC = CNV(1)*VOLM(J)/VOLM(1)
      CALCULATE RELATIVE ERROR
      RE = (CC - CN)/CN
      OBTAIN TOTALS FOR MEAN AND MEAN OF SQUARE OF RE FOR JTH INST
      K = J - 1
      AMN(K) = AMN(K) + RE
      AMNSQ(K) = AMNSQ(K) + RE**2
   20 CONTINUE
   40 CONTINUE
      OBTAIN AND DISPLAY VALUES FOR THE MEAN AND STD  DEV. FOR
      EACH INSTRUMENT TESTED
      DO 30 I = 1,8
      AMEAN = AMN(I)/POINTS
      VAR = ABS(AMNSQ(I)/POINTS - AMEAN**2)
      STDEV = SQRT(VAR)
   30 WRITE(6,2000)I,AMEAN,STDEV
 2000 FORMAT(/5X,"INST. ",I1,5X,"MEAN =",F7.4,5X,"STD  DEV =",F8.6)
      REWIND 6
      STOP
      END
```

TABLE III

SAMPLE DATA REDUCTION PROGRAM

$$\text{new calibration} = (1 + \bar{e}) * \text{unit calibration}$$

where

$\bar{e}$ = mean deviation for the unit.

Values of the new calibration are given in Table V. Plots of the deviation for each instrument are shown in Figures 8-11 using the new calibration as defined above.

Unit	Mean Deviation
Global	.0026
Titled	-.0058
Diffuse	-.0116
Spectral	.0092
Bldg. 1	.0458
Bldg. 2	.0305
Old Global	.0151
Aerospace	-.0119

Table IV
Mean Deviation from NOAA Standard of Instruments Tested

OBSERVATIONS AND RECOMMENDATIONS

Perhaps the most significant and reassuring observation is obtained from inspection of the graphs of the deviation from the NOAA-calibrated local standard as shown in Figures 1-3, for the current met-station instruments, and in Figures 4-6, for our other instruments. One sees in these figures that, for both groups of instruments, the individual field instrument responses have both positive and negative deviations with the response of the local standard (defined as zero deviation) occupying an approximately central location. This observation is especially clear with regard to the current met-station instruments shown in

Figures 1-3. The conclusion from this observation is to accept the calibration of the local standard as being generally accurate as a basis for adjusting the calibration of the remaining instruments. The alternative conclusion, that the response of the local standard be considered as invalid, would only be tenable if the deviations of the field instruments formed a group having a common bias with respect to the local standard, but this is not the case.

In a similar vein, it is notable that the current met-station instruments are grouped both more tightly and uniformly around the local standard's response than is the case for our other instruments. This is reassuring in that the met-station instruments have a history of frequent calibration and better maintenance and should respond more accurately.

To provide a quantitative basis for adjusting the calibration of the field instruments, the average deviation of the field instruments and the sample standard derivation of these deviations has been calculated. In performing these calculations, data points corresponding to a total horizontal solar irradiance less than 0.4 kW/m^2 and/or to a solar zenith angle (instrument direct radiation incident angle) greater than 60^o were not considered. This screening was done to eliminate data at low irradiance and high incidence angle where the instrument response is reasonably expected to be erratic. Actually, in most cases, the instrument response remains uniform with respect to the local standard even near these extremes. The resulting statistics are given in Table IV.

Only one instrument exhibits a noticeable variation in response with irradiance, and this is PSP17059 which is used as the spectral horizontal pyranometer. The data shown were for data points in which this instrument was deployed with a clear dome rather than the RG-2 filter dome normally employed. The trend in increasing e with increasing irradiance is interpreted as an increase in comparative calibration or decrease in sensitivity. This is consistent with an observed trend to lower response during the summer.

The first statistical test of this data is a verification that the individual responses are reasonably well-distributed about the local standards response (i.e. zero deviation). The appropriate statistical investigation is a test of the validity of an assumption that the mean of all deviations is zero. From Table IV, the sample mean and standard deviation of the means of the field instruments and the Student-

t statistic are computed to be

$$x = -.0073$$
$$s = .0231$$
$$t = .89$$

On the basis of the preceeding statistics, the hypothesis that the mean deviation equals that of the local standard can be accepted at a confidence level of at least 40%. The distribution is even tighter if the four met-station instruments alone are considered for which one has:

$$x = .0036$$
$$s = .0154$$
$$t = .66$$

Considering these instruments only, one can accept the hypothesis that the mean deviation is zero with a confidence of at least 64%.

Assuming on the basis of the preceeding observations that the response of the NOAA-calibrated local standard instrument can be taken as a reference, recommended calibration correction factors can be calculated for each field instrument from the data given in Table II. The resulting recommended calibrations are listed for each instrument in Table V. The calculation procedure is as follows:

The mean deviation is given by

$$\bar{e} = \left\langle \frac{Co - Cu}{Cu} \right\rangle = \frac{\bar{C} - Cu}{Cu}$$

to minimize the bias between field instruments and the local standard, assume a multiplier x such that:

$$\bar{e} = \frac{\bar{C} - x\,Cu}{Cu} = 0$$

consequently, $x = (1+\bar{e})$.

Using this multiplier, calibrations for the field instruments can be adjusted as to

TABLE V
LOG OF INSTRUMENTS IN CROSS CALIBRATION TESTS

Instrument Application	Serial Number	Date Installed (Mo-Day-Yr)	Nominal Calibration Value (mV-M-M/Kw)	Date (Mo-Day-Yr)	Agency	New Calibration (mV-M-M/Kw)
STES Instruments						
Global	16262	8-22-79	10.78	6-29-79	PSL	11.02
Tilted	17066	11-10-78	9.79	7-78	Ga.Tech	9.73
Diffuse	17351	11-10-78	9.55	7-78	Ga.Tech	9.44
Spectral	17059	11-10-78	9.43	7-78	Ga.Tech	9.52
Other Instruments						
Shen.Bldg.1	15223		9.77	12- 2-76	Factory	9.32
Shen.Bldg.2	15224		9.50	12- 2-76	Factory	9.21
Old Global	15254	7-21-78	10.36	3- 8-78	PSL	10.52
Aero.Engr.	16684		9.54	1-24-78	Factory	9.43
NOAA Reference						
Standard	17064		9.52		NOAA	

the values shown in Table V. The primary recommendation resulting from this experiment is that the calibrations be adjusted to the values given in Table V. As shown in Figures 8-11, the result of this adjustment is a very tight distribution especially for the STES instruments.

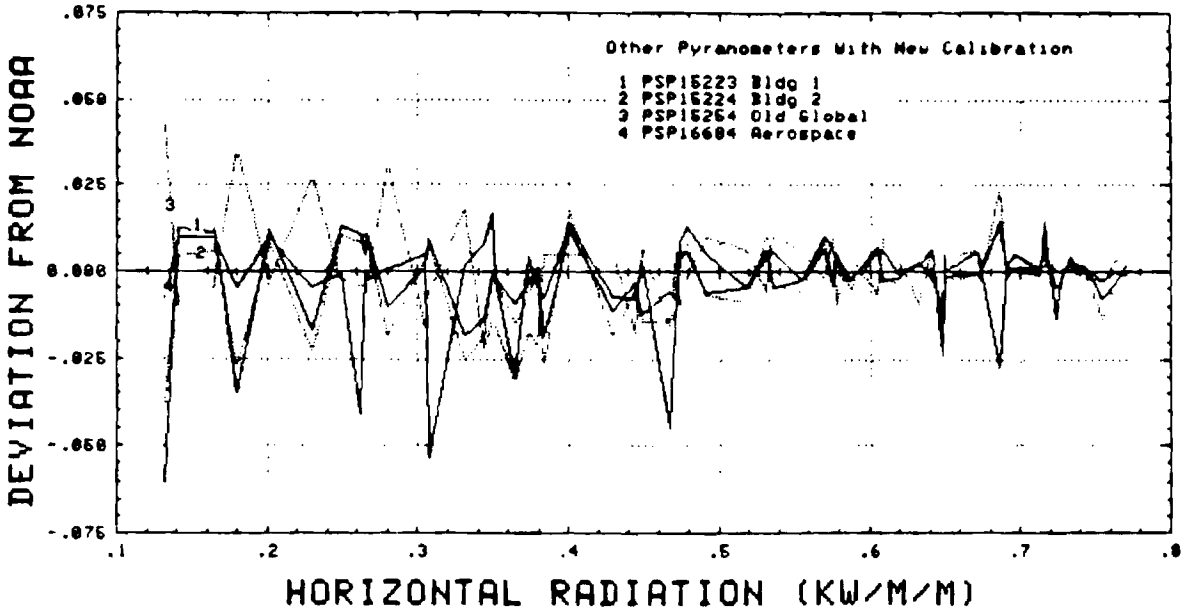


Fig. 10. Instrument Deviation after Calibration Adjustment (Fig. 4)

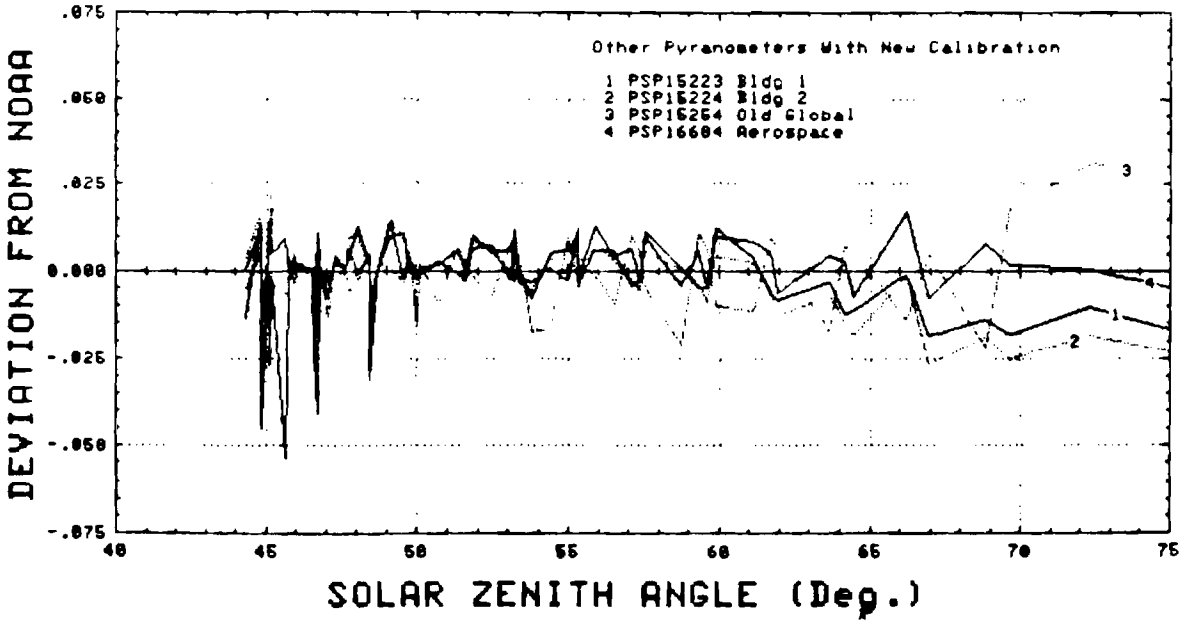


Fig. 11. Instrument Deviation after Calibration Adjustment (Fig. 5)

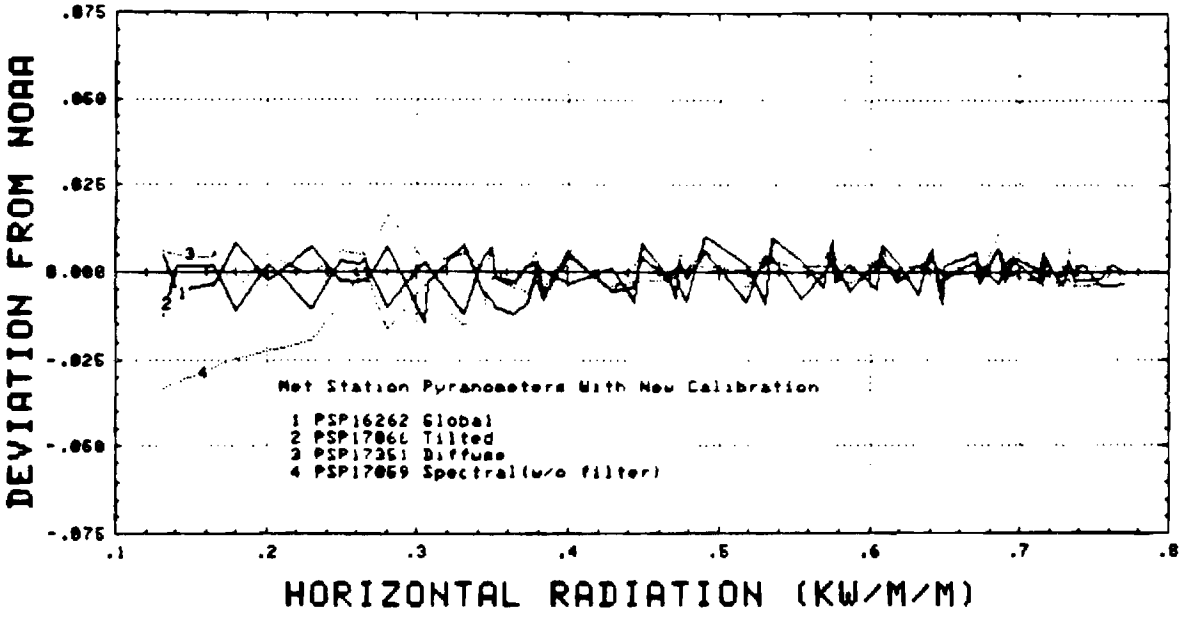


Fig. 8. Instrument Deviation after Calibration Adjustment (Fig. 1)

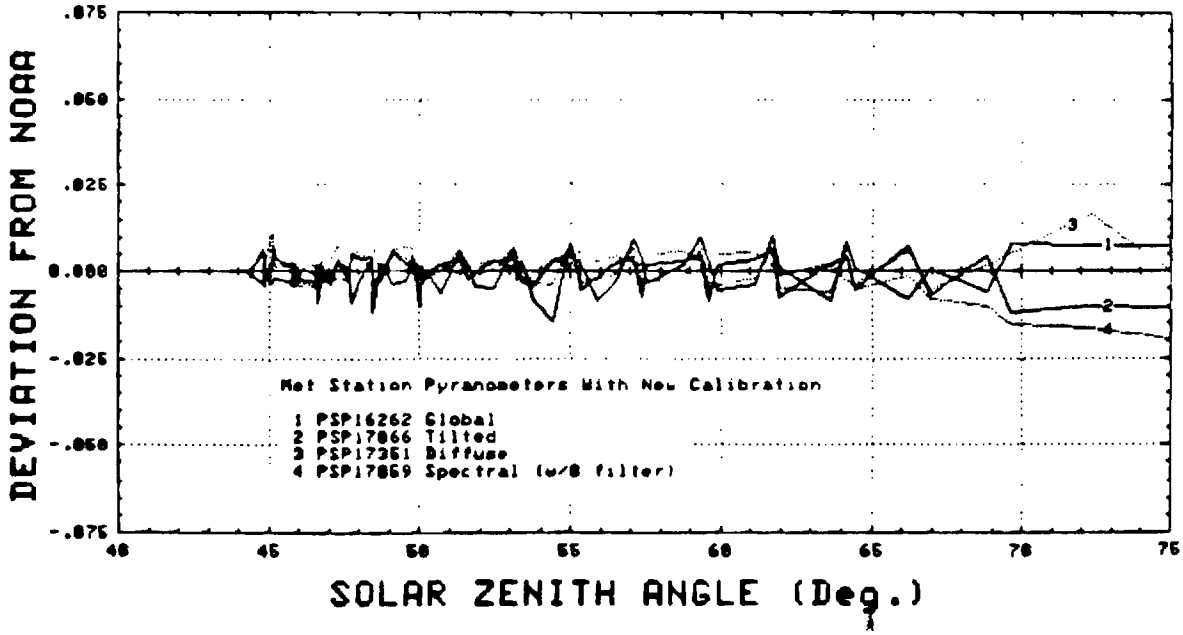


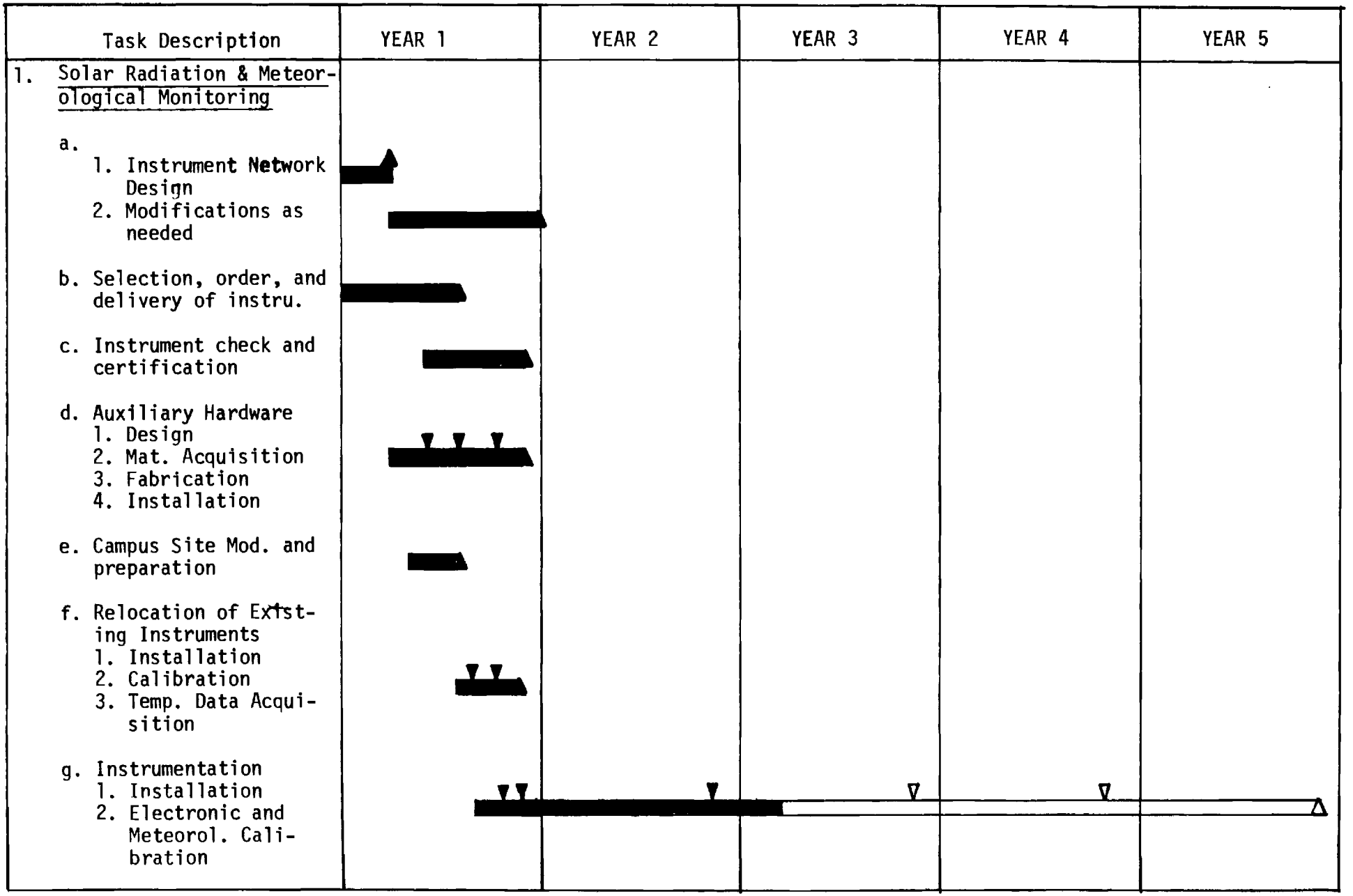
Fig. 9. Instrument Deviation after Calibration Adjustment (Fig. 2)

MILESTONES AND BUDGET

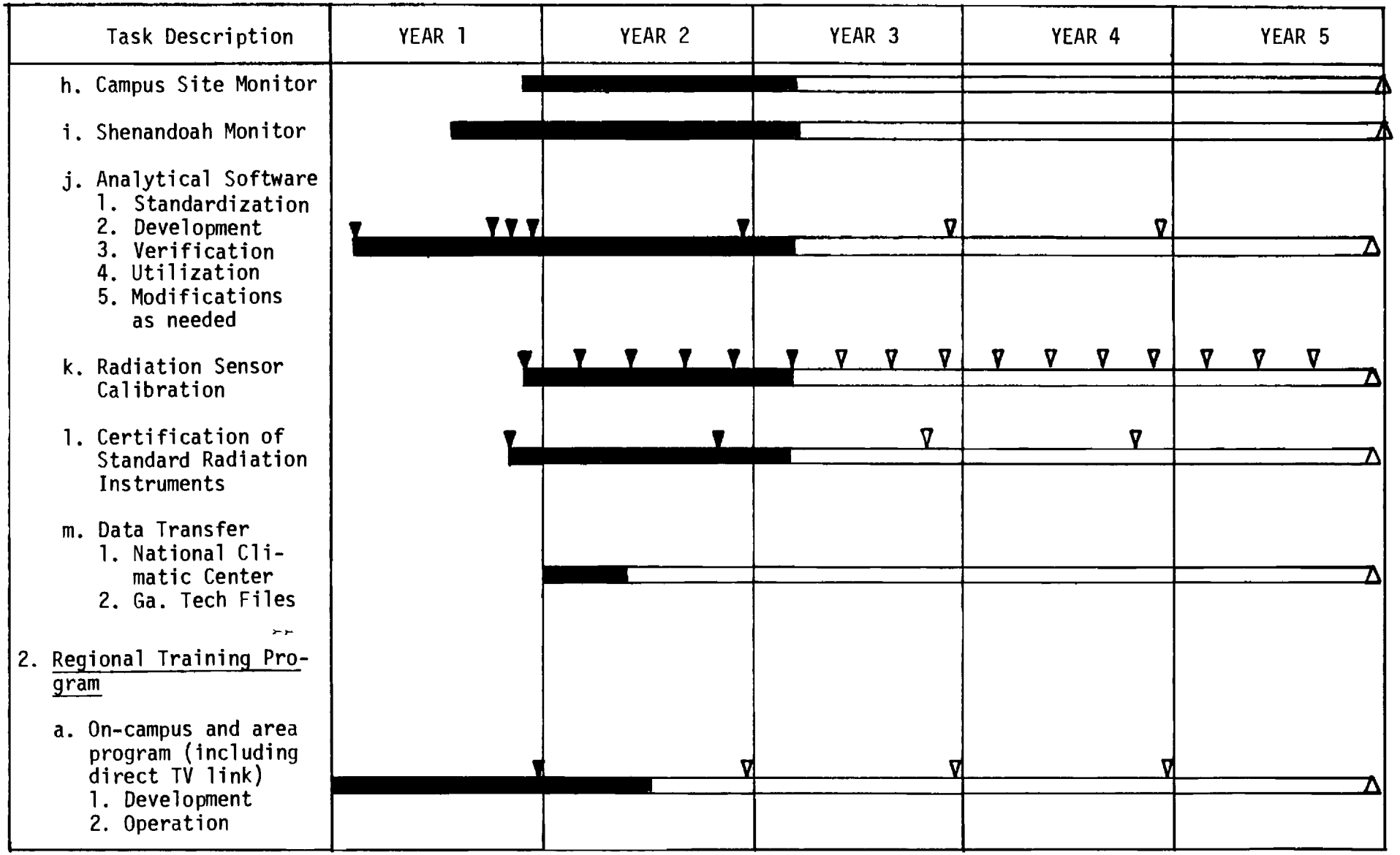
Current expenditures, through December 1979, total $70,564, about $20,000 over linear projection project expenditure. However, most of this ($14,000 was due to equipment purchases during the first quarter).

A detailed milestone and progress chart is attached.

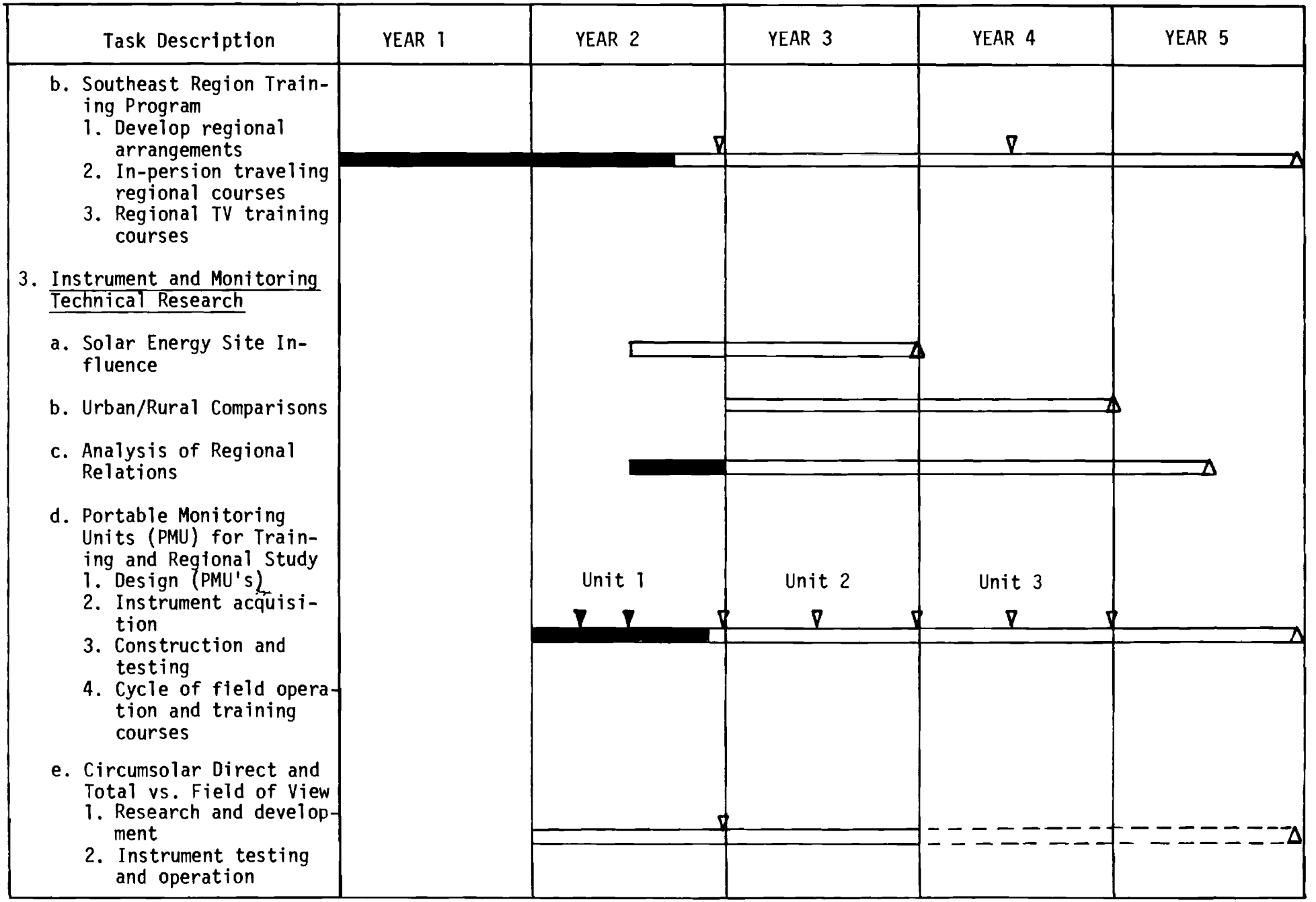
Milestone Chart



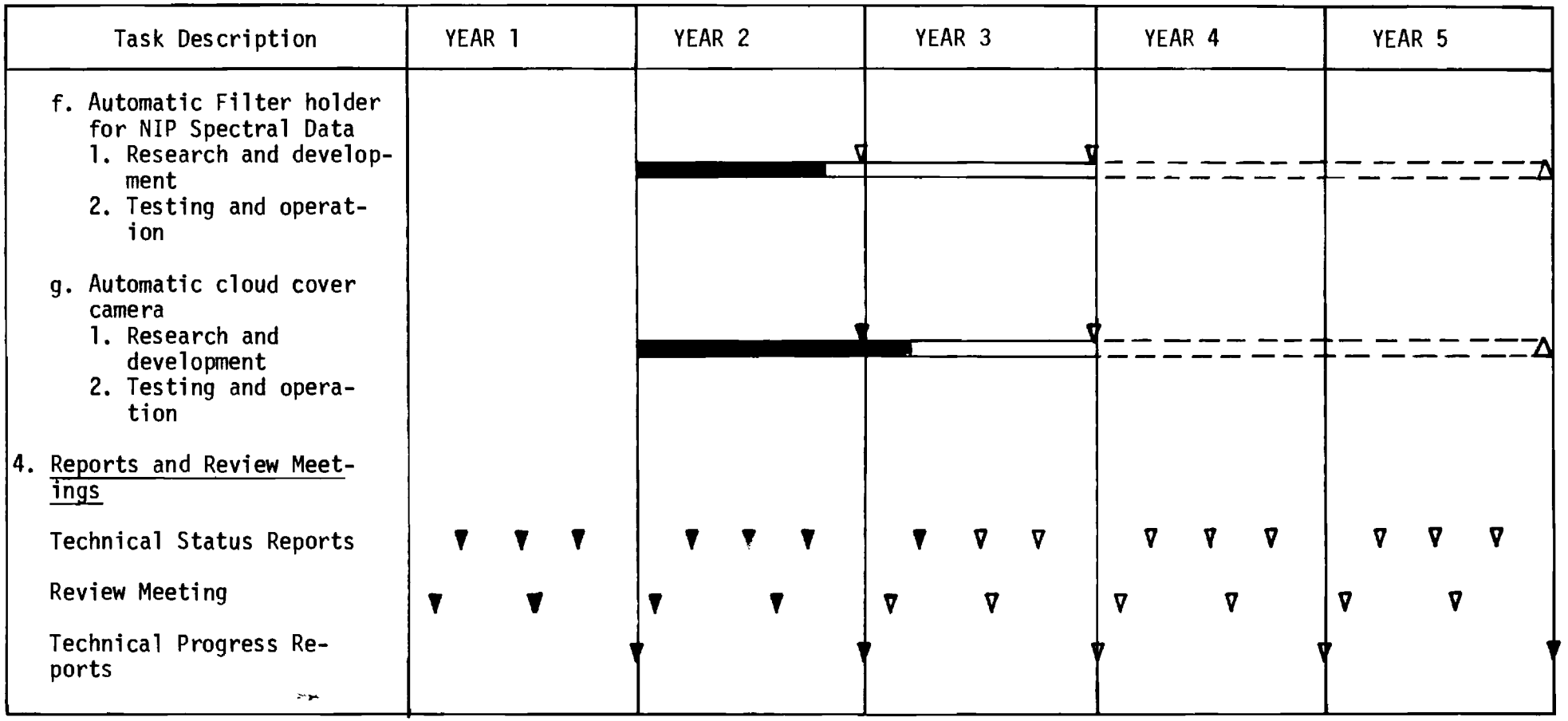
Milestone Chart (Cont'd.)



Milestone Chart (Cont'd)



Milestone Chart (cont'd)



ORO/5604-80-3

PROGRAM FOR SOLAR ENERGY METEOROLOGICAL RESEARCH AND TRAINING SITE (REGION 3)

Quarterly Technical Status and
Contract Management Report

C. G. Justus, Principal Investigator

Georgia Institute of Technology
Atlanta, GA 30332

May 1980

Report Period January 1, 1980 - March 31, 1980

PREPARED FOR THE UNITED STATES
DEPARTMENT OF ENERGY

DIVISION OF DISTRIBUTED SOLAR TECHNOLOGY

UNDER GRANT DEFG05-77-ET20153

Georgia Tech Project E-16-C02

1. PROJECT OBJECTIVES

This broad program of solar energy and meteorological monitoring, training, and research has the following main objectives for the proposed 5 years duration:

(1) to provide for the Southeast Region (Region 3) a set of continuously monitored and quality controlled data on solar radiation and atmospheric phenomena related to solar energy collection, conversion, and storage, and to relate these to the extensive ongoing solar energy research and engineering projects carried out by Georgia Tech and in the Southeast Region.

(2) by analysis of monitoring results at two sites (on campus, adjacent to the Georgia Tech thermal Test facility and off-campus adjacent to the Shenandoah Solar Total Energy Site), determine: a) optimum siting of solar radiation and meteorological monitoring instruments relative to solar energy systems to provide the most representative site data with the least influence from the solar collector systems, b) adequacy and representativeness for the Southeast Region of various methodologies for relating easily measured phenomena (minutes of sunshine, cloud cover, etc.) to engineering quality solar radiation data (direct, diffuse, and global insolation, etc.).

(3) to establish and maintain a training program which will allow: a) undergraduate and graduate engineering students, through elective or minor courses, to become informed in the areas of meteorology and atmospheric science as they relate to solar and wind energy, b) graduate students in the atmospheric sciences to become informed of the specific requirements of monitoring, analysis, interpretation and presentation of meteorological information related to engineering aspects of solar and wind

energy, c) professionals in various fields, through short courses and seminars, to become familiar with the new and rapidly developing aspects of solar energy engineering and technology, especially the radiation monitoring and meteorological aspects of this field.

(4) through cooperation in the 3/2 dual degree program, the National Consortium for Graduate Degrees for Minorities in Engineering and other academic programs, enhance the opportunities for minorities (especially Black American and Puerto Ricans) and women in the solar energy engineering and technology field.

(5) instrumentation and monitoring techniques research and development to enhance the engineering applicability of the solar radiation and meteorological monitoring and to provide better instructional tools through low cost instrument systems for educational purposes.

(6) to investigate, with the fixed site instruments and the portable monitoring units (PMU's), the influence of urban haze and aerosols as well as the high levels of natural turbidity which occur in parts of the Southeast region, and with the PMU's to sample the effects on solar radiation of a wide variety of geography (which spans coastal, piedmont plains, and mountainous within the Southeast region).

2. PROJECT PLAN

A. Research Approach and Definition of Tasks

The proposed project plan is divided into three major tasks, each with several subtasks, as follows:

Task 1: Solar Radiation and Meteorological Monitoring Program

This task includes acquisition, initial calibration, and installation of the solar radiation and meteorological instrumentation at the on-campus (Solar Thermal Test Facility/Wind Turbine Test Facility) site and the off-campus (Shenandoah Georgia Solar Total Energy Project) site. Existing and new instrumentation at these sites will be combined and interfaced through data loggers and magnetic tape recording into a form which can be processed, summarized, and formatted by the main campus computer (CYBER 70/74 system). Annual calibration of the instrumentation, against national standards where appropriate, will be carried out, as well as more frequent field calibration of the radiation monitoring instruments. A carefully monitored program of daily instrument inspection and routine maintenance will also be carried out. The detailed outline of the various subtasks under Task 1 is as follows:

a. Based on the proposed variables to be monitored, the Instrumentation Network Design will be laid out using equipment assigned by Georgia Tech for use on this program and additional units to be purchased with the sponsor's approval.

b. Using the preliminary network design, the Selection, Order, and Delivery will be based on recommendations made at the preliminary review meeting of all of the principal investigators.

c. Before an instrument or support unit is put into service, each piece of equipment will be examined and subjected to an Instrument Check and Certification for conformation to Georgia Tech and vendor specifications.

Instruments which fail to pass inspection will be returned to the vendor for replacement.

d. The design, fabrication, and installation of the Auxiliary Hardware which will house and/or support the instrumentation will be according to recommendations in the above articles, of the respective vendors, and to experience gained through use of similar apparatus.

e. Campus Site Modification and Preparation will be done as necessary to accomodate the new monitoring site and instrumentation.

f. The Relocation of Existing Instruments will be performed expeditiously to prevent a loss of data in the present continuous monitoring system. Exposure and operation of the solar radiation and meteorological monitoring instruments will be in accordance with criteria and guidelines published by the WMO(1971) and the IGY (1958).

g. The Instrumentation will be installed and calibrated after it is received and certified.

h. Campus Site Monitoring for the total system is scheduled to begin during the last month of Year 1, but a continuous monitoring system will have been in use for the entire period.

i. The Shenandoah Monitoring System will be used for the entire period after the "Sandia Solar Monitor System" is installed. This basic instrument package will be augmented by additional equipment. Data from the Shenandoah System will be logged on cassette tape. It will then be reformatted and merged with the campus site monitoring data on the CYBER system and put on magnetic tape.

j. Analytical Software will be developed in a standard format which will be used for all research sites. This format was selected at the project directors meeting in Washington, D. C. Data will be taken for analysis

to the CYBER 70/74 computer for transfer to the standard format and storage in this format on magnetic tape, and for transmittal of the raw and summarized data to the National Climatic Center in Asheville.

k. An Instrumentation Calibration by use of a set of special instruments or by techniques specified by the instrument vendor will be performed quarterly to verify instrument accuracy and to establish a permanent record of possible instrument degradation which would affect the acquired data.

l. At the end of each phase of the program, the set of standards would be taken to the Solar Radiation Calibration Facility in Denver, Colorado for Certification of Standard Instruments.

m. The Data Transfer to the National Climatic Center is scheduled to begin on a monthly basis at the end of Year 1 and would continue for the next 48 months. The data will also be stored at Georgia Tech.

Task 2: Solar Energy/Meteorology Training Program

This task involves development and implementation of on-campus, immediate area, and regional training. Existing graduate courses in general meteorology and boundary layer meteorology will be expanded by a new graduate course (open to seniors) in the area of meteorology for solar and wind energy. This course will include training in instrumentation, data acquisition, reduction and analysis. With the formation of an Atmospheric Sciences academic program anticipated to begin in September 1978, this academic curriculum will offer engineers and engineering technologists the opportunity to learn, as a minor or elective course basis, fundamentals of meteorology as it applies to solar energy engineering and technology. It will also allow meteorologists and atmospheric science students in the new program to interact with and learn about the engi-

neering problems and needs related to solar energy technology. This academic program and related short courses for professionals will be made available as appropriate through a unique instructional TV system to become operational at Georgia Tech in September 1978. A "traveling course" to be put on as a short course or a one quarter course at regional colleges will also be implemented. Initially this will be conducted by Georgia Tech personnel. Later, as arrangements are worked out and the local college has personnel trained to proctor or tutor the course, this will be carried via the TV system, either on a video cassette delivery basis, or if the system is developed, via a satellite TV link.

Task 3: Instrumentation and Monitoring Techniques Research

Various research and development aspects related both to the monitoring and the training program, will be carried out under this task. The location of the two monitoring sites - one on-campus within about two miles from the heart of downtown Atlanta, one at the new town Shenandoah site, about 45 miles from Atlanta - will allow evaluation of urban/rural differences, especially related to urban haze and aerosols. The exposure of the instruments adjacent to the Solar Thermal Test Facility and Wind Turbine Test Facility at Georgia Tech will allow evaluation of potential effects on temperature, moisture, and air flow near such facilities. Hence optimum locations will be evaluated for instruments near solar energy facilities, to provide maximum degree of representativeness and minimum influence from the solar energy system on the meteorological measurements. Many models have been proposed in which various meteorological and simply measured radiation parameters (sunshine hours, temperature, cloud cover, solar declination, etc.) can be used to estimate engineering quality insolation (global and direct insolation, global on inclined surfaces, etc.). Some of these methods are those of Fritz (1957), Angstrom (1956), Black et al (1954), Glover and McCulloch (1958), Sabbagh et al (1977), Liu and Jordan (1960),

Whillier (1956) Bennett (1965), Swartman and Ogunladeo (1967), Reddy (1971a, 1971b), Norris (1966), Masson (1966), Atwater (1974), Lumb (1964), L'Vova (1972), Machta (1974), Paltridge (1974), Lin (1973), and Randall et al (1977). Through NOAA (Machta, private communication) a set of linear regression coefficients is being developed for the 26 rehabilitated solar radiation data stations. Using this model, the National Climatic Center will prepare, by November 1977, solar radiation estimates for 200 stations in the U.S. These data will be put on magnetic tape in SOLMET format. The data from the on-campus and off-campus monitoring sites as well as from the 5 Southeastern sites in the new 35 site NOAA network (Riches, 1975) will be used to study regional relationships between simply monitored parameters and solar radiation data for engineering purposes. Results of the contract study resulting from the recent RFP to Perform a Solar Radiation Data Forecast and Interpolation Analysis will also be applied in this study. Emphasis will be on study of the influence of turbidity (high in parts of the Southeast region), and regional geography (which spans coastal, piedmont plains, and mountain areas). During the second and subsequent years up to three low cost portable monitoring units will be designed and built. These units will be used in the training program as instructional systems for the traveling course to regional colleges. Data from these units will also be used in the analysis of methods to relate simple measured parameters to engineering quality insolation data for the region. Other instrument and monitoring techniques for which research and development projects are envisioned will include:

a. an automatic filter changing wheel for the normal incidence pyrheliometer (to automatically switch on a 1/minute or less basis between clear, OG1, RG2, and RG8 filters),

b. circumsolar radiation with the Lawrence Berkley Labs circumsolar telescope, currently on campus and projected to remain here throughout at least a portion of this project, and

c. an automatic wide field of view camera system to provide a film record of cloud cover conditions.

3. ADMINISTRATIVE STATUS

No administrative changes have been made. The project team and organization is now as shown in Figure 3.1.

4. PROGRESS TO DATE

Task 1: Solar Radiation and Meteorological Monitoring Program

a. Completed in prior period. No modifications required.

b. Completed in prior period. No modifications required.

c. Completed in prior period.

d. Completed in prior period.

e. Completed in prior period. Campus site now in full operation.

f. Completed in prior period.

g. Another re-calibration of all of the on-campus instruments was done during the quarter. Another re-calibration test is scheduled for next quarter.

h. Campus-site monitoring is now being done. Except for the usual maintenance, all instrumentation is functioning properly.

i. The Shenandoah monitoring system is now in operation. Data reduction and quality control is now almost up to current.

j. Completed in prior period. Routine daily spot checks continue for the serial output from the on-campus site.

k. See item g, above.

l. No further calibrations at NOAA were done. Further comparisons and sun-shade checks against the Kendall active cavity radiometer will be done in the next calibration tests.

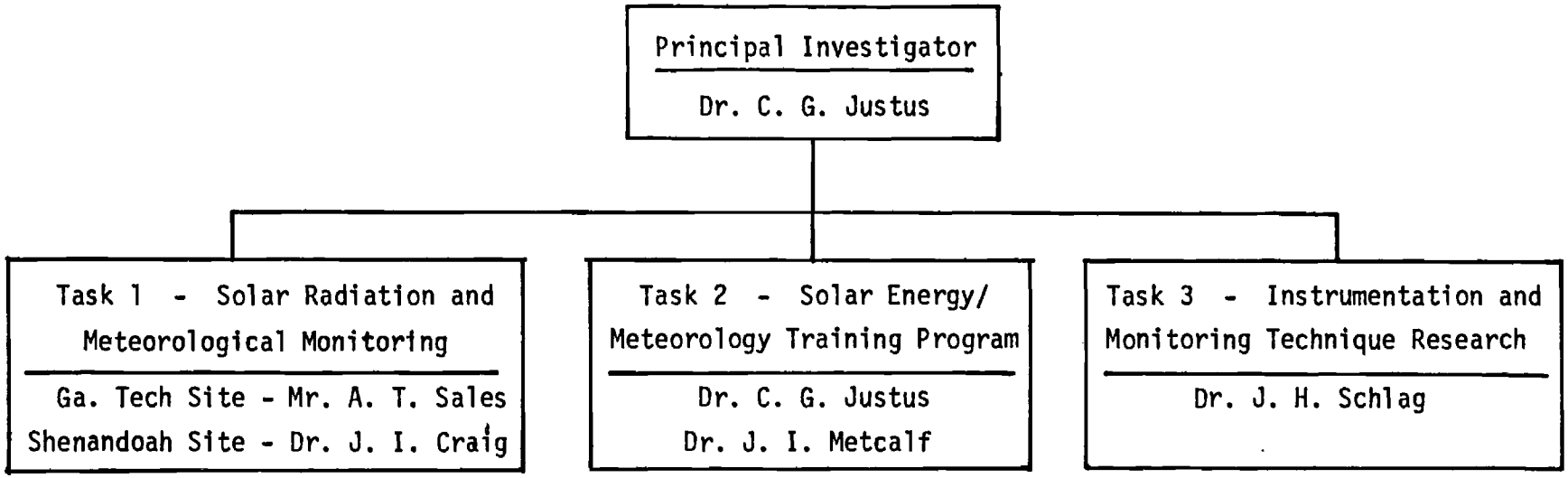


Figure 3.1 - Project Organization Chart

m. Transfer of several months of on-campus data and Shenandoah data to NCC is complete. Further data will be transferred as it is processed.

Task 2: Solar Energy/Meteorological Training Program

The annual graduate course Geo. S. 6932 "Meteorology for Solar and Wind Energy" will be taught in the Spring quarter. Nine students are registered, four from outside the department (representing various engineering schools)

A workshop for NOAA personnel, regional and state energy office people and state climatologists within the region is being planned for September. The program will concentrate on energy and climate applications of solar radiation.

The NSF minority graduate training proposed "Graduate Research Opportunities in Atmospheric and Terrestrial Sciences" is under review, and appears to be favorably received on the basis of site visits and reviews.

Task 3: Instrumentation and Monitoring Techniques Research

An instrument trailer has been acquired. It has been decided to remount the portable monitoring unit system on this trailer for easier portability. Problems with the MARS data logger tape transport appear to have been corrected.

The all-sky camera system has been in operation for several months and is operating well. A student has begun quantitative analyses of these data.

A photocell direct beam radiometer has been designed and is undergoing field tests. It appears to compare quite closely with NIP readings (generally $\lesssim$5% error). The basic unit and filters for the automated sun photometer are in, but components for a μA current amplifier to yield suitable voltage level output signals has to be constructed.

The automatic sunshine duration recorder system integrating signals over 200 w/m^2 threshold from a NIP is now in operation and generally compares quite favorably with the Campbell-Stokes sunshine duration data. Further comparisons will continue.

Figures 1-9 show some of the results for Spring (Figs. 1-3), Summer (Figs. 4-6), and Winter (Figs. 7-9) data for measured versus Watt modeled direct, global and diffuse radiation, for both clear and partly cloudy conditions. The model values in these figures were generated using observed percent sunshine and climatological values for turbidity and precipitable water. The Watt model generally accounts for cloud cover fairly well for direct beam (less well for diffuse) through the use of a simple one-minus-% sunshine modifier. Further improvement in the direct beam models might be achieved through the use of observed turbidity and precipitable water when available. This will be the subject of further investigation. The Bird model direct beam and the Atwater-Ball model for global radiation are also being studied and compared to the NOAA/ARL regression models for global and Aerospace (Randall) regression model for direct.

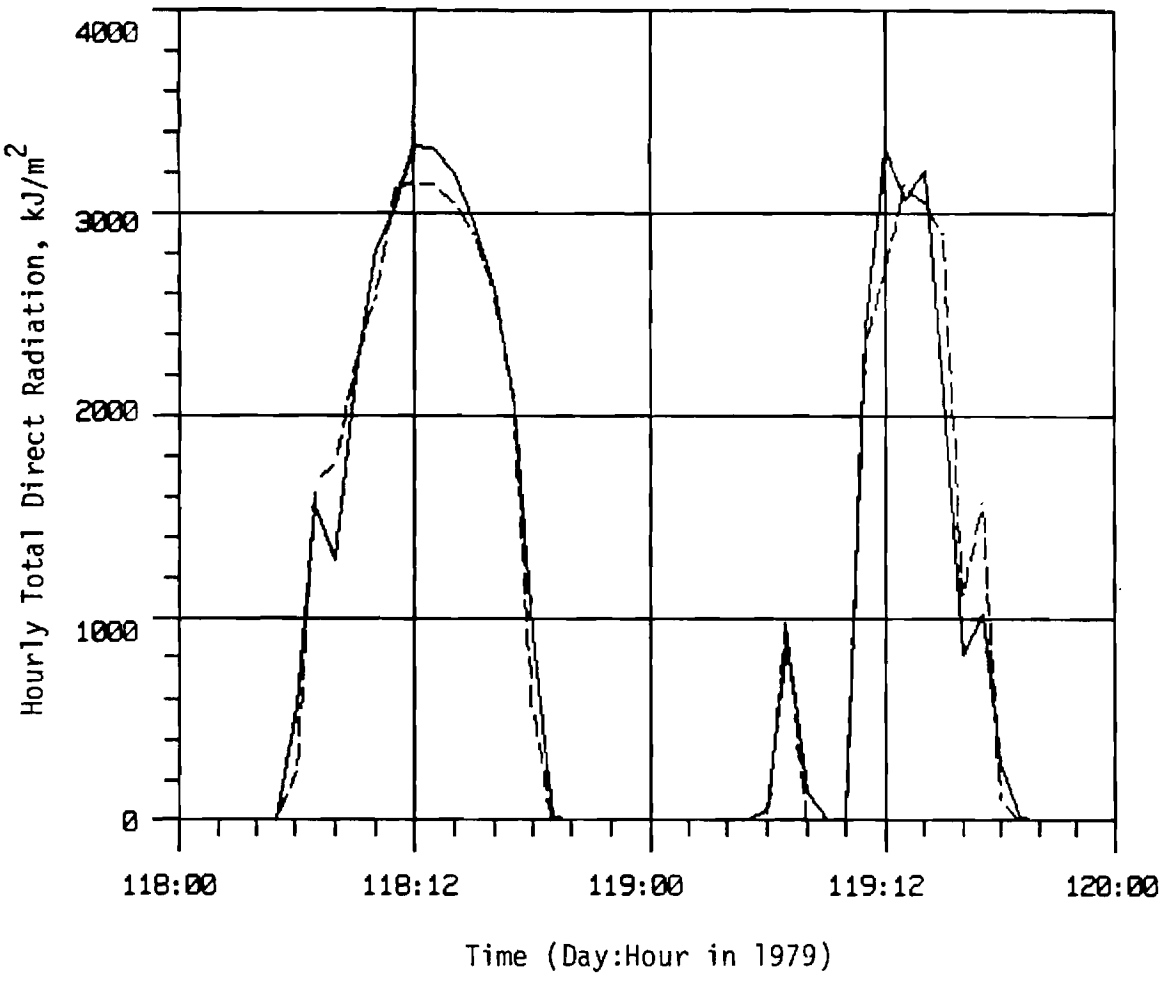


Figure 1. Measured (solid line) and Watt Model (dashed line) Values for Direct Normal Radiation on a Clear Day (118 = April 28) and Partly Cloudy Day (119 = April 29) in 1979.

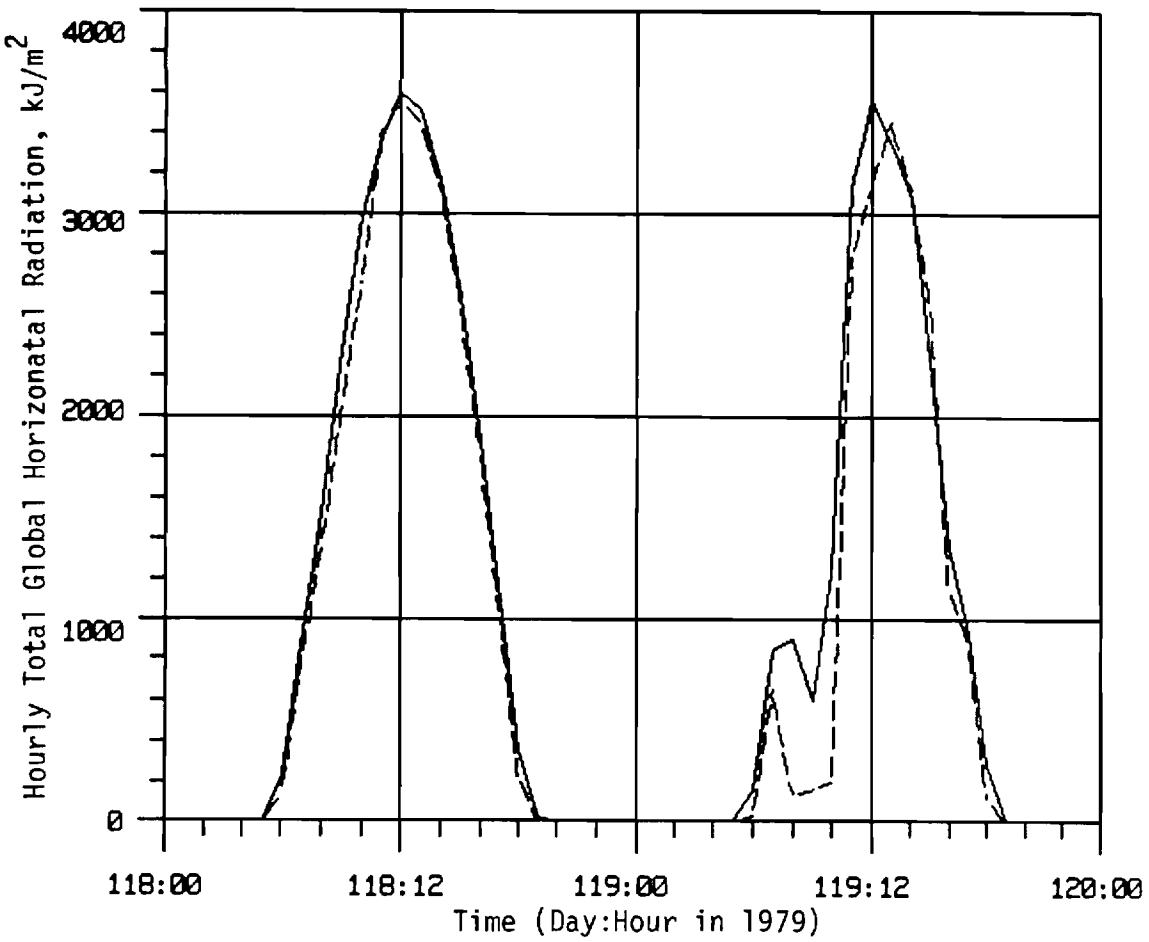


Figure 2. As in Figure 1 for Global Horizonatal Radiation.

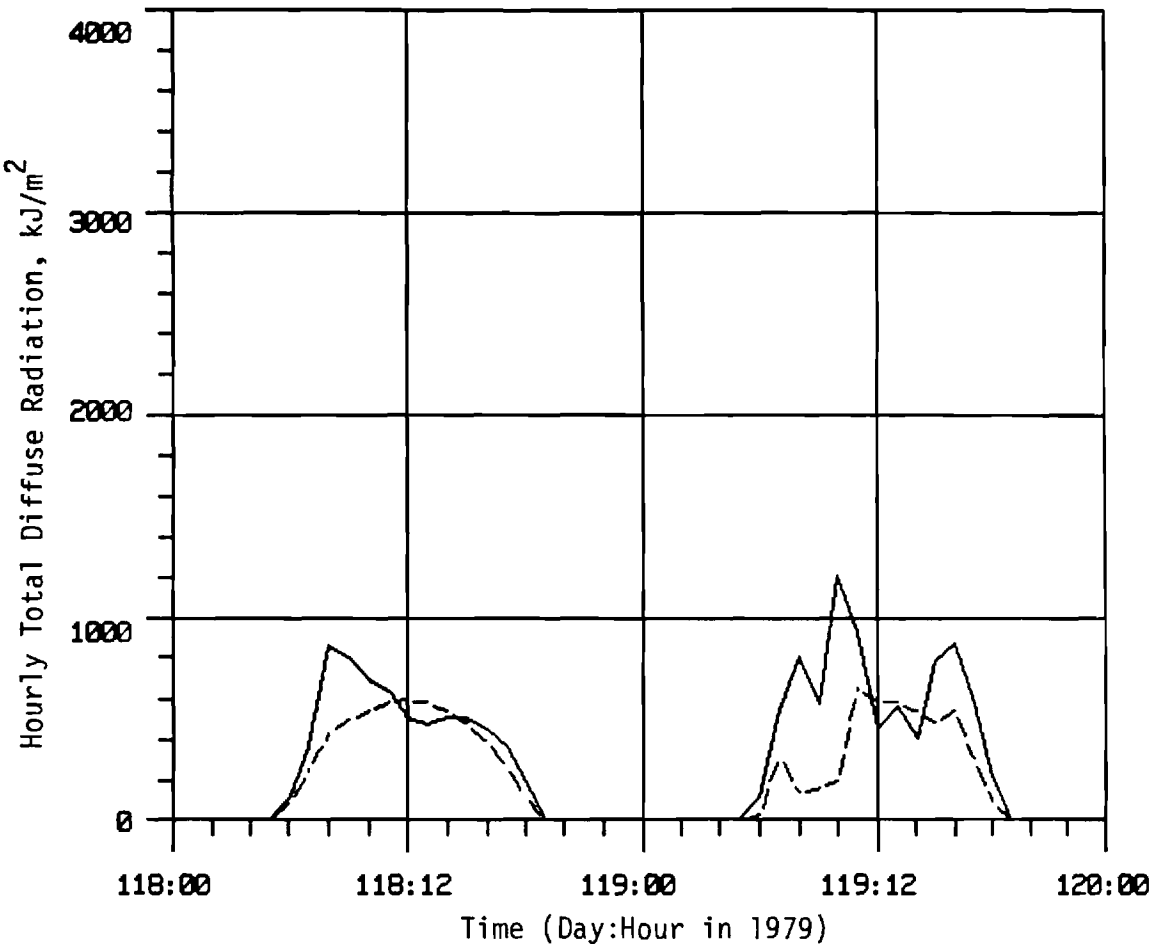


Figure 3. As in Figure 1 for Horizontal Diffuse Radiation.

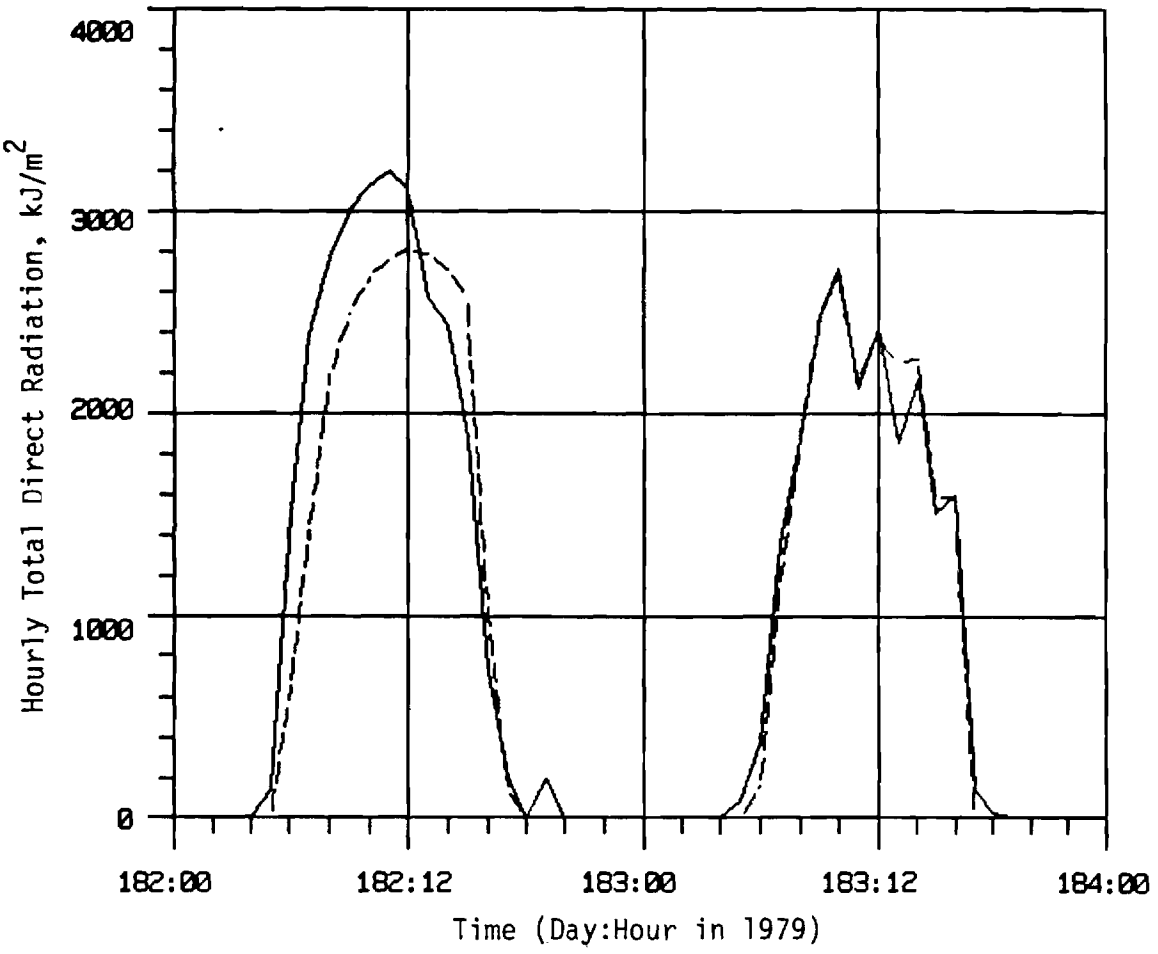


Figure 4. Measured (solid line) and Watt Model (dashed line) Values for Direct Normal Radiation on a Mostly Clear Day (182 = July 1) and a Partly Cloudy Day (183 = July 2) in 1979.

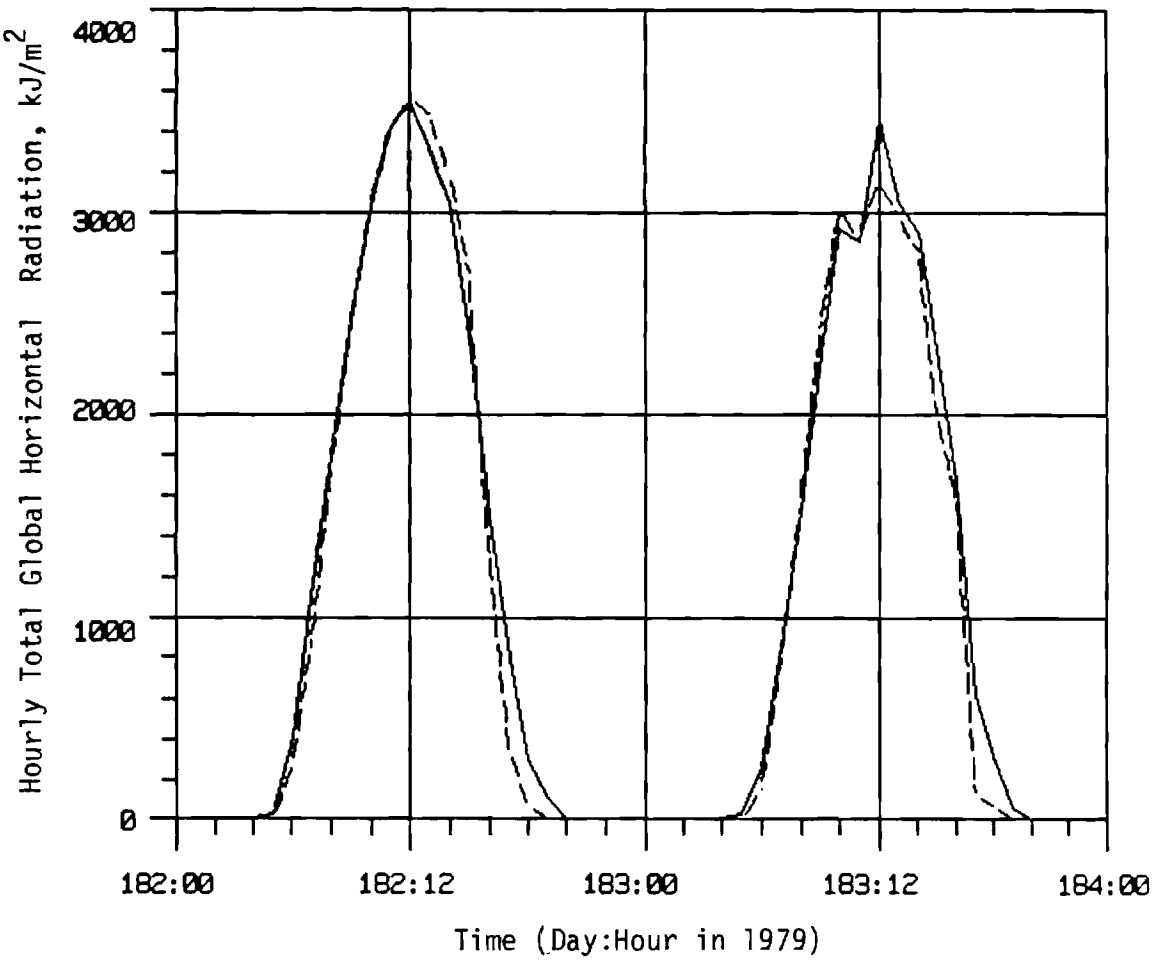


Figure 5. As in Figure 4 for Global Horizontal Radiation.

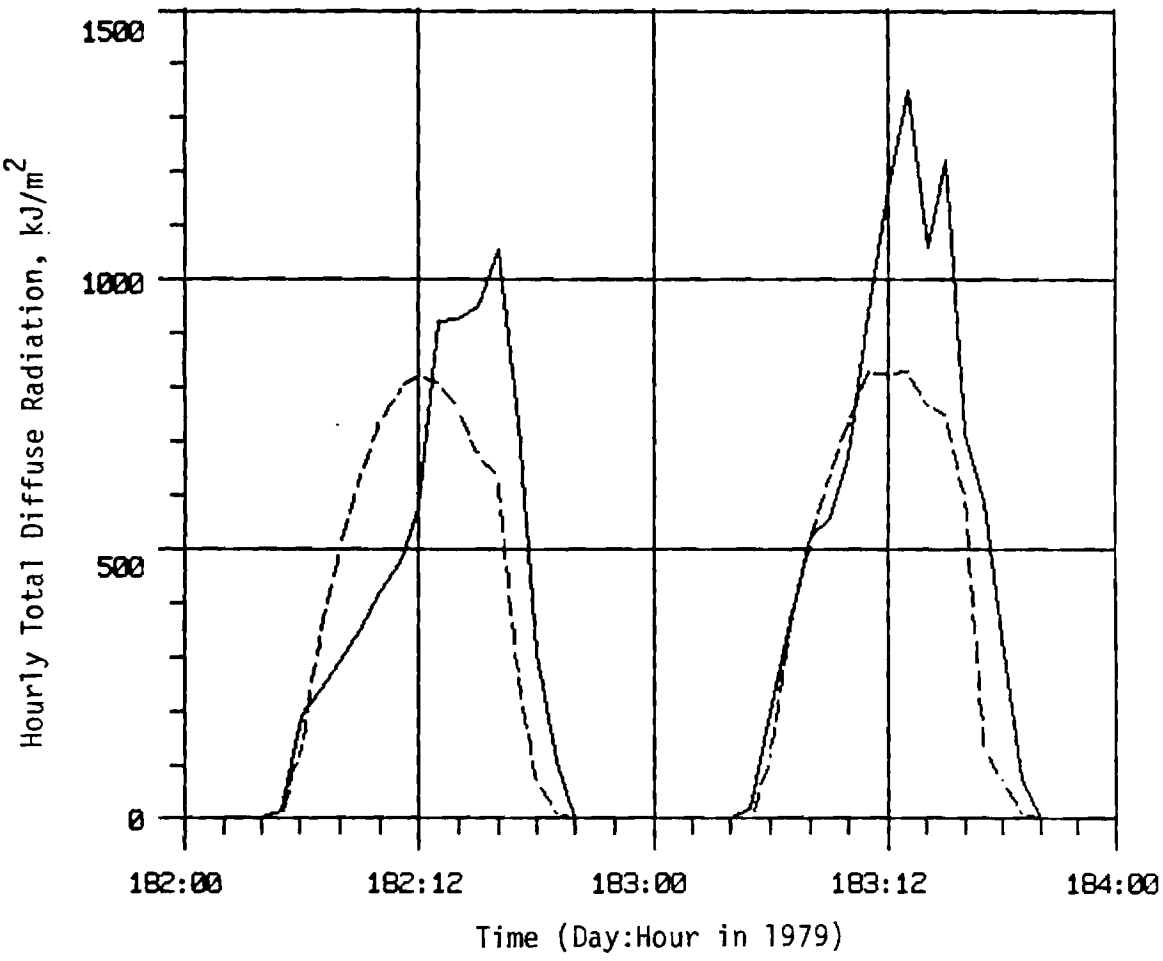


Figure 6. As in Figure 4 for Horizontal Diffuse Radiation.

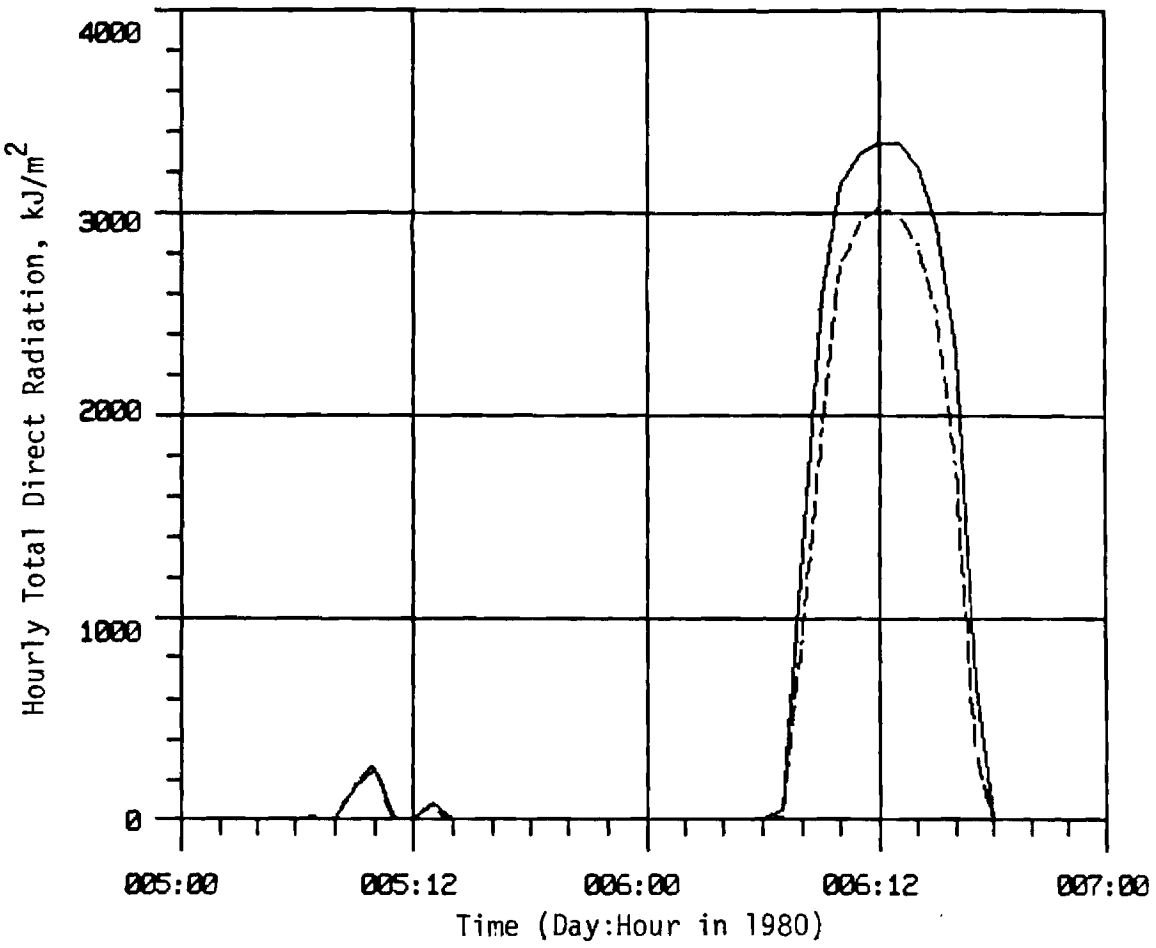


Figure 7. Measured (solid line) and Watt Model (dashed line) Values for Direct Normal Radiation on a Mostly Cloudy Day (005 = January 5) and a Clear Day (006 = January 6) in 1980.

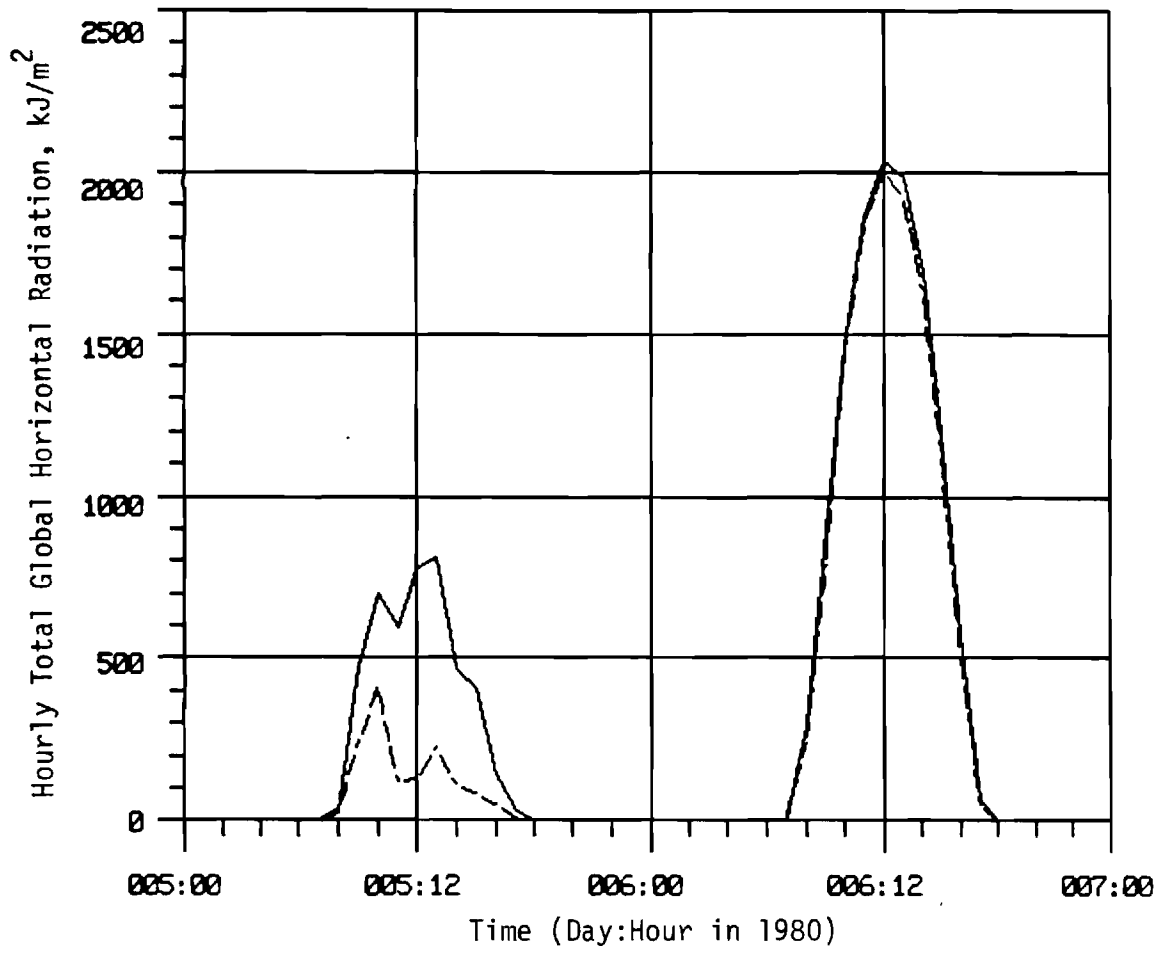


Figure 8. As in Figure 7 for Global Horizontal Radiation.

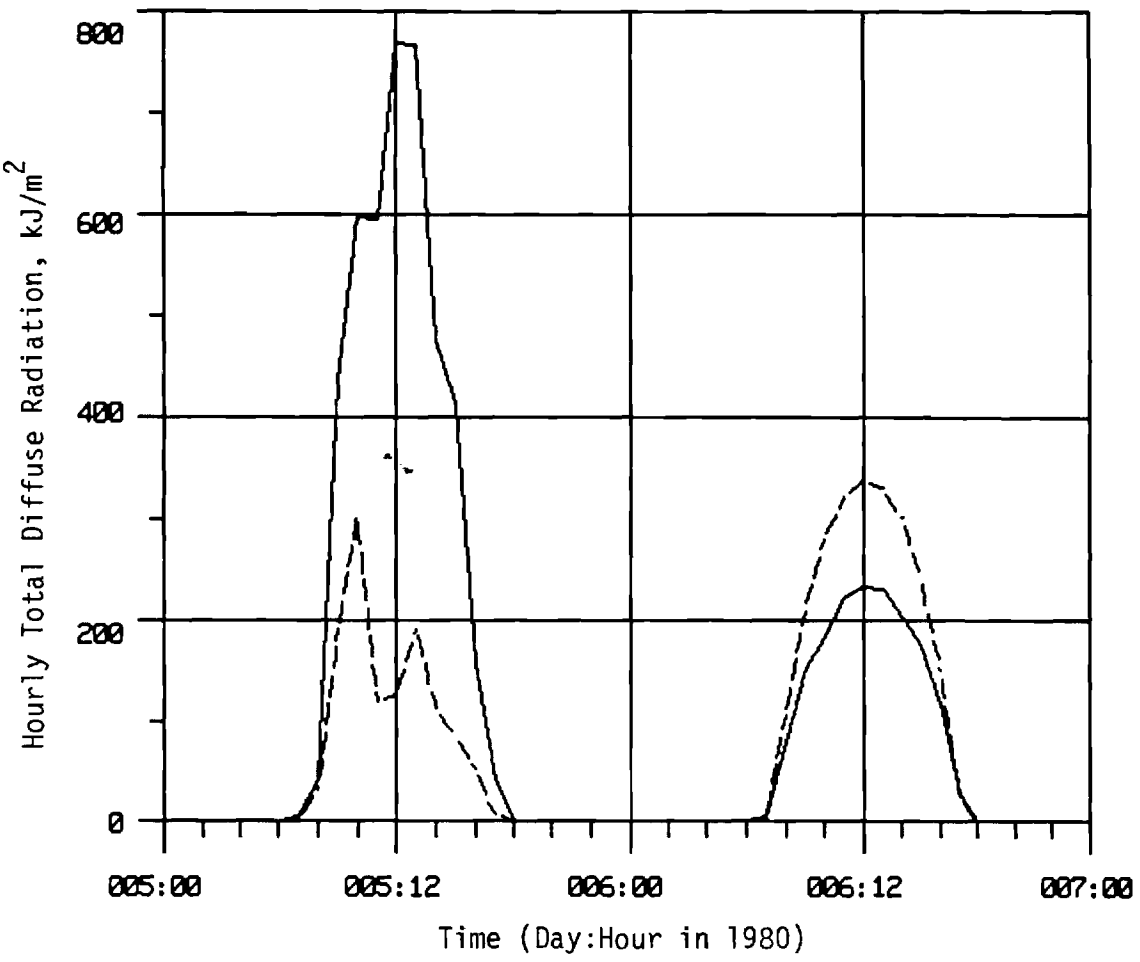


Figure 9. As in Figure 7 for Horizontal Diffuse Radiation.

MILESTONES AND BUDGET

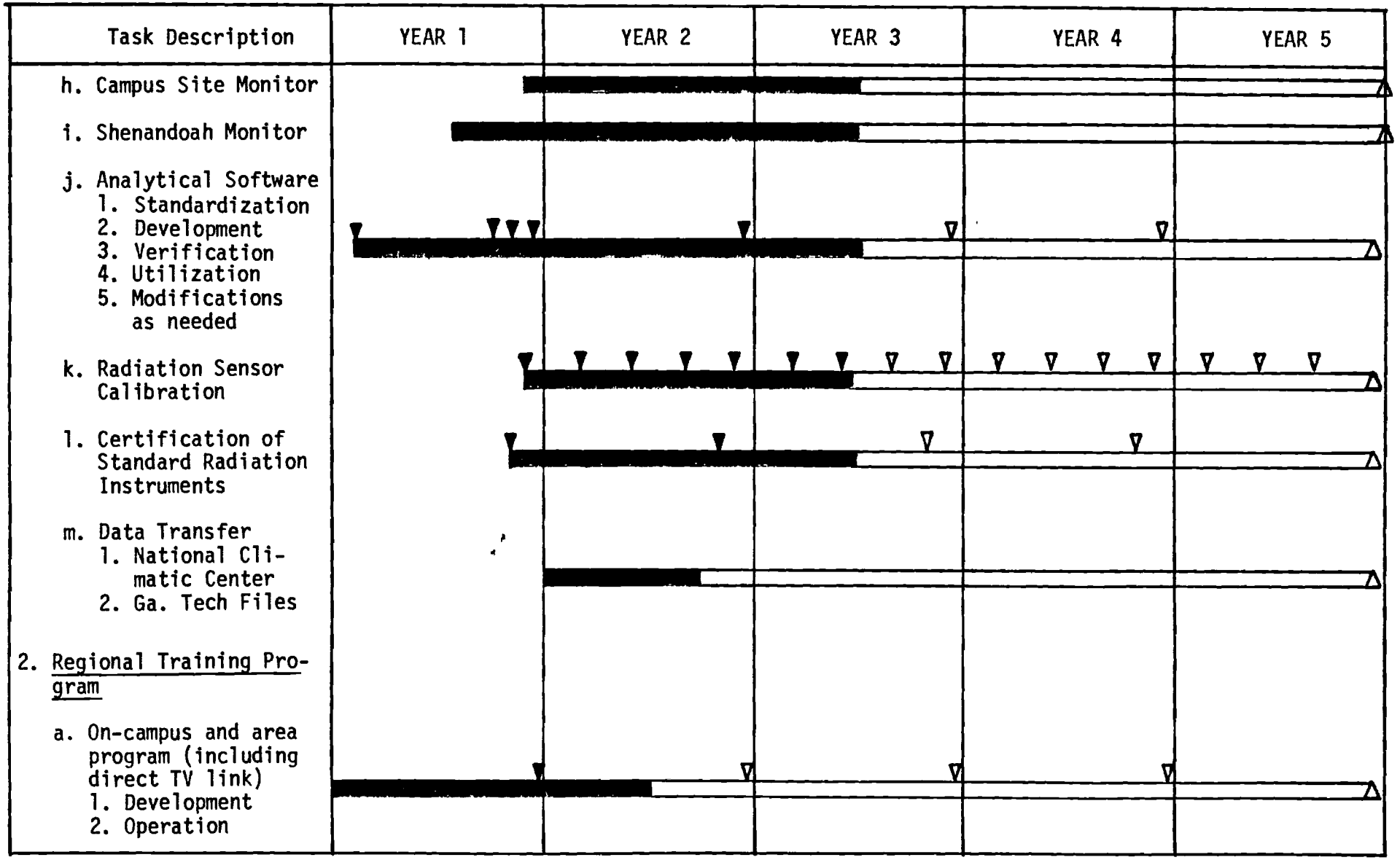
Current expenditures, through March 1980, total approximately $118,000, about $18,000 over linear projection project expenditure. However, most of this ($14,000) was due to equipment purchase during the first quarter.

A detailed milestone and progress chart is attached.

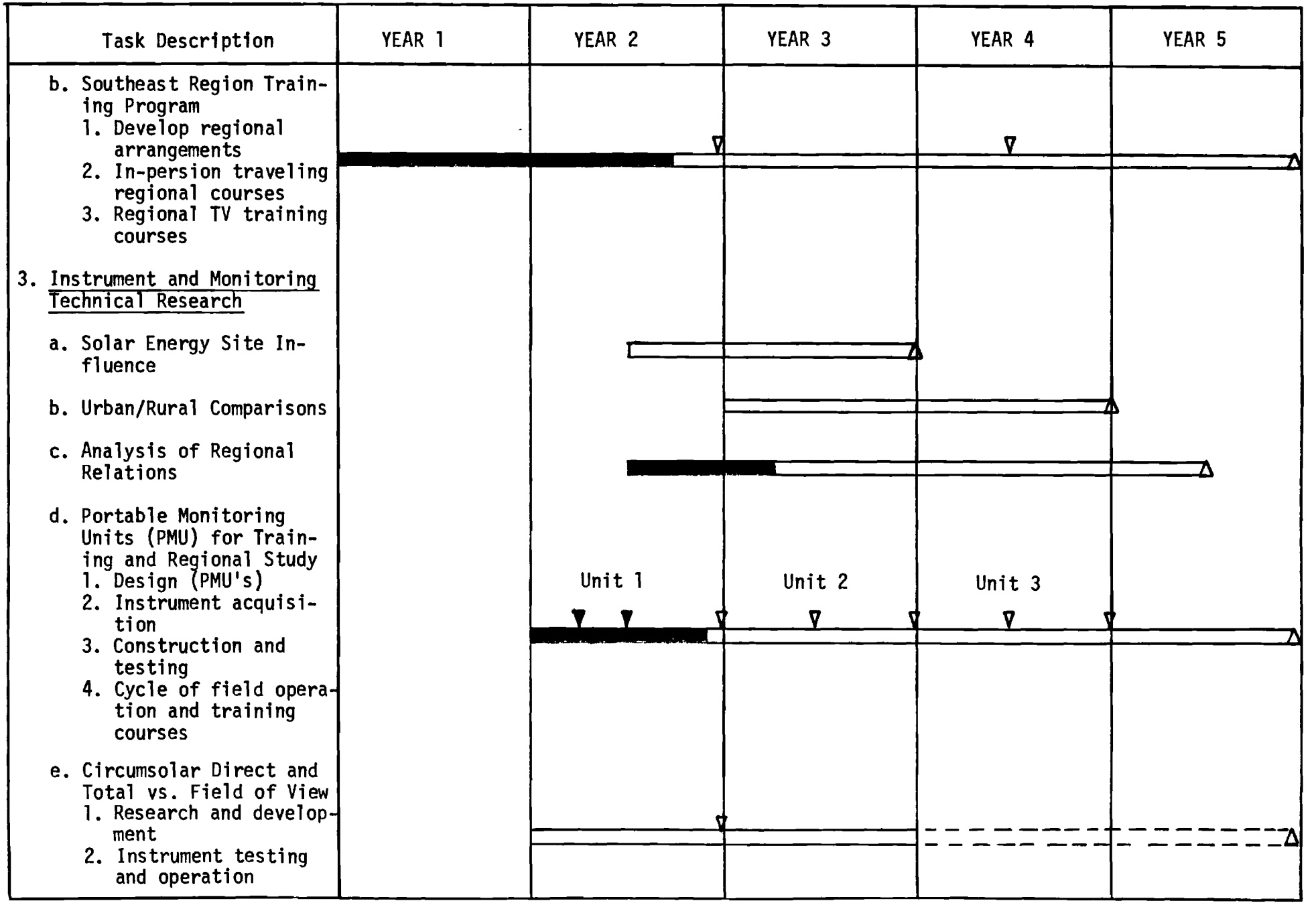
Milestone Chart

Task Description	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
1. Solar Radiation & Meteorological Monitoring					
a. 1. Instrument Network Design 2. Modifications as needed					
b. Selection, order, and delivery of instru.					
c. Instrument check and certification					
d. Auxiliary Hardware 1. Design 2. Mat. Acquisition 3. Fabrication 4. Installation					
e. Campus Site Mod. and preparation					
f. Relocation of Existing Instruments 1. Installation 2. Calibration 3. Temp. Data Acquisition					
g. Instrumentation 1. Installation 2. Electronic and Meteorol. Calibration					

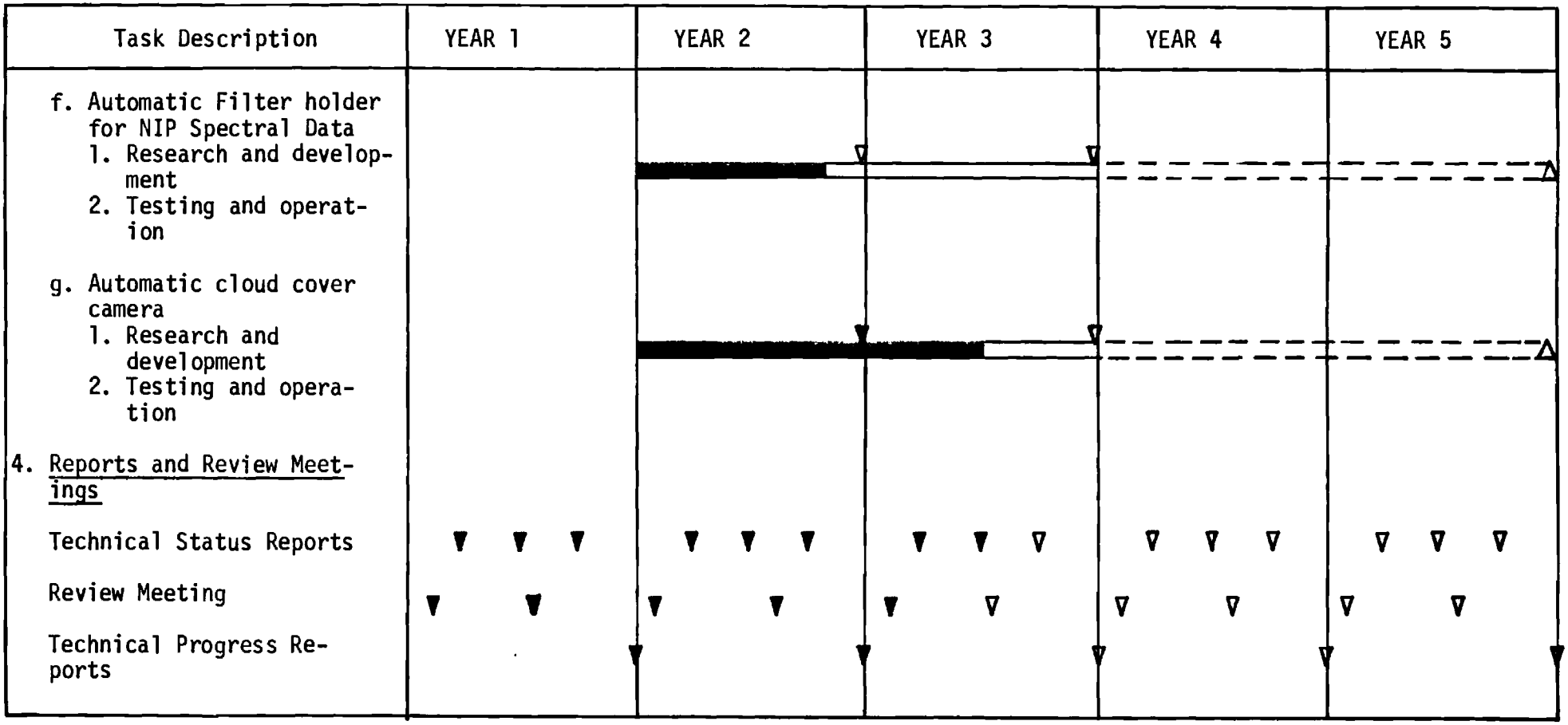
Milestone Chart (Cont'd.)



Milestone Chart (Cont'd)



Milestone Chart (cont'd)



ORO/5604-80-4

PROGRAM FOR SOLAR ENERGY METEOROLOGICAL RESEARCH AND TRAINING SITE (REGION 3)

Quarterly Technical Status and
Contract Management Report

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Atlanta, GA 30332

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Georgia Tech Project E-16-C02

1. PROJECT OBJECTIVES

This broad program of solar energy and meteorological monitoring, training, and research has the following main objectives for the proposed 5 years duration:

(1) to provide for the Southeast Region (Region 3) a set of continuously monitored and quality controlled data on solar radiation and atmospheric phenomena related to solar energy collection, conversion, and storage, and to relate these to the extensive ongoing solar energy research and engineering projects carried out by Georgia Tech and in the Southeast Region.

(2) by analysis of monitoring results at two sites (on campus, adjacent to the Georgia Tech thermal Test facility and off-campus adjacent to the Shenandoah Solar Total Energy Site), determine: a) optimum siting of solar radiation and meteorological monitoring instruments relative to solar energy systems to provide the most representative site data with the least influence from the solar collector systems, b) adequacy and representativeness for the Southeast Region of various methodologies for relating easily measured phenomena (minutes of sunshine, cloud cover, etc.) to engineering quality solar radiation data (direct, diffuse, and global insolation, etc.).

(3) to establish and maintain a training program which will allow: a) undergraduate and graduate engineering students, through elective or minor courses, to become informed in the areas of meteorology and atmospheric science as they relate to solar and wind energy, b) graduate students in the atmospheric sciences to become informed of the specific requirements of monitoring, analysis, interpretation and presentation of meteorological information related to engineering aspects of solar and wind

energy, c) professionals in various fields, through short courses and seminars, to become familiar with the new and rapidly developing aspects of solar energy engineering and technology, especially the radiation monitoring and meteorological aspects of this field.

(4) through cooperation in the 3/2 dual degree program, the National Consortium for Graduate Degrees for Minorities in Engineering and other academic programs, enhance the opportunities for minorities (especially Black American and Puerto Ricans) and women in the solar energy engineering and technology field.

(5) instrumentation and monitoring techniques research and development to enhance the engineering applicability of the solar radiation and meteorological monitoring and to provide better instructional tools through low cost instrument systems for educational purposes.

(6) to investigate, with the fixed site instruments and the portable monitoring units (PMU's), the influence of urban haze and aerosols as well as the high levels of natural turbidity which occur in parts of the Southeast region, and with the PMU's to sample the effects on solar radiation of a wide variety of geography (which spans coastal, piedmont plains, and mountainous within the Southeast region).

2. PROJECT PLAN

A. Research Approach and Definition of Tasks

The proposed project plan is divided into three major tasks, each with several subtasks, as follows:

Task 1: Solar Radiation and Meteorological Monitoring Program

This task includes acquisition, initial calibration, and installation of the solar radiation and meteorological instrumentation at the on-campus (Solar Thermal Test Facility/Wind Turbine Test Facility) site and the off-campus (Shenandoah Georgia Solar Total Energy Project) site. Existing and new instrumentation at these sites will be combined and interfaced through data loggers and magnetic tape recording into a form which can be processed, summarized, and formatted by the main campus computer (CYBER 70/74 system). Annual calibration of the instrumentation, against national standards where appropriate, will be carried out, as well as more frequent field calibration of the radiation monitoring instruments. A carefully monitored program of daily instrument inspection and routine maintenance will also be carried out. The detailed outline of the various subtasks under Task 1 is as follows:

a. Based on the proposed variables to be monitored, the Instrumentation Network Design will be laid out using equipment assigned by Georgia Tech for use on this program and additional units to be purchased with the sponsor's approval.

b. Using the preliminary network design, the Selection, Order, and Delivery will be based on recommendations made at the preliminary review meeting of all of the principal investigators.

c. Before an instrument or support unit is put into service, each piece of equipment will be examined and subjected to an Instrument Check and Certification for conformation to Georgia Tech and vendor specifications.

Instruments which fail to pass inspection will be returned to the vendor for replacement.

d. The design, fabrication, and installation of the Auxiliary Hardware which will house and/or support the instrumentation will be according to recommendations in the above articles, of the respective vendors, and to experience gained through use of similar apparatus.

e. Campus Site Modification and Preparation will be done as necessary to accomodate the new monitoring site and instrumentation.

f. The Relocation of Existing Instruments will be performed expeditiously to prevent a loss of data in the present continuous monitoring system. Exposure and operation of the solar radiation and meteorological monitoring instruments will be in accordance with criteria and guidelines published by the WMO(1971) and the IGY (1958).

g. The Instrumentation will be installed and calibrated after it is received and certified.

h. Campus Site Monitoring for the total system is scheduled to begin during the last month of Year 1, but a continuous monitoring system will have been in use for the entire period.

i. The Shenandoah Monitoring System will be used for the entire period after the "Sandia Solar Monitor System" is installed. This basic instrument package will be augmented by additional equipment. Data from the Shenandoah System will be logged on cassette tape. It will then be reformatted and merged with the campus site monitoring data on the CYBER system and put on magnetic tape.

j. Analytical Software will be developed in a standard format which will be used for all research sites. This format was selected at the project directors meeting in Washington, D. C. Data will be taken for analysis

to the CYBER 70/74 computer for transfer to the standard format and storage in this format on magnetic tape, and for transmittal of the raw and summarized data to the National Climatic Center in Asheville.

k. An Instrumentation Calibration by use of a set of special instruments or by techniques specified by the instrument vendor will be performed quarterly to verify instrument accuracy and to establish a permanent record of possible instrument degradation which would affect the acquired data.

l. At the end of each phase of the program, the set of standards would be taken to the Solar Radiation Calibration Facility in Denver, Colorado for Certification of Standard Instruments.

m. The Data Transfer to the National Climatic Center is scheduled to begin on a monthly basis at the end of Year 1 and would continue for the next 48 months. The data will also be stored at Georgia Tech.

Task 2: Solar Energy/Meteorology Training Program

This task involves development and implementation of on-campus, immediate area, and regional training. Existing graduate courses in general meteorology and boundary layer meteorology will be expanded by a new graduate course (open to seniors) in the area of meteorology for solar and wind energy. This course will include training in instrumentation, data acquisition, reduction and analysis. With the formation of an Atmospheric Sciences academic program anticipated to begin in September 1978, this academic curriculum will offer engineers and engineering technologists the opportunity to learn, as a minor or elective course basis, fundamentals of meteorology as it applies to solar energy engineering and technology. It will also allow meteorologists and atmospheric science students in the new program to interact with and learn about the engi-

neering problems and needs related to solar energy technology. This academic program and related short courses for professionals will be made available as appropriate through a unique instructional TV system to become operational at Georgia Tech in September 1978. A "traveling course" to be put on as a short course or a one quarter course at regional colleges will also be implemented. Initially this will be conducted by Georgia Tech personnel. Later, as arrangements are worked out and the local college has personnel trained to proctor or tutor the course, this will be carried via the TV system, either on a video cassette delivery basis, or if the system is developed, via a satellite TV link.

Task 3: Instrumentation and Monitoring Techniques Research

Various research and development aspects related both to the monitoring and the training program, will be carried out under this task. The location of the two monitoring sites - one on-campus within about two miles from the heart of downtown Atlanta, one at the new town Shenandoah site, about 45 miles from Atlanta - will allow evaluation of urban/rural differences, especially related to urban haze and aerosols. The exposure of the instruments adjacent to the Solar Thermal Test Facility and Wind Turbine Test Facility at Georgia Tech will allow evaluation of potential effects on temperature, moisture, and air flow near such facilities. Hence optimum locations will be evaluated for instruments near solar energy facilities, to provide maximum degree of representativeness and minimum influence from the solar energy system on the meteorological measurements. Many models have been proposed in which various meteorological and simply measured radiation parameters (sunshine hours, temperature, cloud cover, solar declination, etc.) can be used to estimate engineering quality insolation (global and direct insolation, global on inclined surfaces, etc.). Some of these methods are those of Fritz (1957), Angstrom (1956), Black et al (1954), Glover and McCulloch (1958), Sabbagh et al (1977), Liu and Jordan (1960),

Whillier (1956) Bennett (1965), Swartman and Ogunladeo (1967), Reddy (1971a, 1971b), Norris (1966), Masson (1966), Atwater (1974), Lumb (1964), L'Vova (1972), Machta (1974), Paltridge (1974), Lin (1973), and Randall et al (1977). Through NOAA (Machta, private communication) a set of linear regression coefficients is being developed for the 26 rehabilitated solar radiation data stations. Using this model, the National Climatic Center will prepare, by November 1977, solar radiation estimates for 200 stations in the U.S. These data will be put on magnetic tape in SOLMET format. The data from the on-campus and off-campus monitoring sites as well as from the 5 Southeastern sites in the new 35 site NOAA network (Riches, 1975) will be used to study regional relationships between simply monitored parameters and solar radiation data for engineering purposes. Results of the contract study resulting from the recent RFP to Perform a Solar Radiation Data Forecast and Interpolation Analysis will also be applied in this study. Emphasis will be on study of the influence of turbidity (high in parts of the Southeast region), and regional geography (which spans coastal, piedmont plains, and mountain areas). During the second and subsequent years up to three low cost portable monitoring units will be designed and built. These units will be used in the training program as instructional systems for the traveling course to regional colleges. Data from these units will also be used in the analysis of methods to relate simple measured parameters to engineering quality insolation data for the region. Other instrument and monitoring techniques for which research and development projects are envisioned will include:

a. an automatic filter changing wheel for the normal incidence pyrheliometer (to automatically switch on a 1/minute or less basis between clear, OG1, RG2, and RG8 filters),

b. circumsolar radiation with the Lawrence Berkley Labs circumsolar telescope, currently on campus and projected to remain here throughout at least a portion of this project, and

c. an automatic wide field of view camera system to provide a film record of cloud cover conditions.

3. ADMINISTRATIVE STATUS

No administrative changes have been made. The project team and organization is now as shown in Figure 3.1.

4. PROGRESS TO DATE

Task 1: Solar Radiation and Meteorological Monitoring Program

a. Completed in prior period. No modifications required.

b. Completed in prior period. No modifications required.

c. Completed in prior period.

d. Completed in prior period.

e. Completed in prior period. Campus site now in full operation.

f. Completed in prior period.

g. The traveling standard CSIRO total radiometer was received and will be compared to Georgia Tech and Shenandoah total radiometers along with a regular complete calibration of the operational instruments.

h. Campus-site monitoring continues. Except for the usual maintenance, all instrumentation is functioning properly.

i. The Shenandoah monitoring system continues in operation. Data reduction and quality control is current.

j. Completed in prior period. Routine daily spot checks continue for the serial output from the on-campus site.

k. See item g, above.

l. No further calibrations at NOAA were done. Further comparisons and sun-shade checks against the Kendall active cavity radiometer will be done in the next calibration tests.

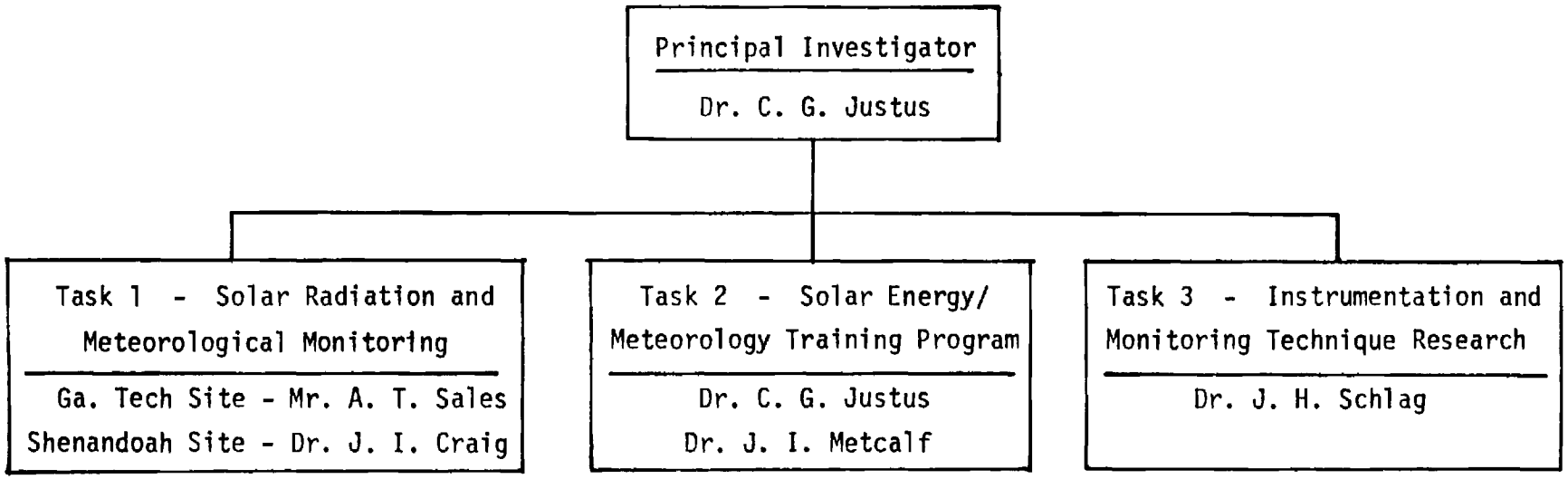


Figure 3.1 - Project Organization Chart

m. Transfer of several months of on-campus data and Shenandoah data to NCC is complete. Further data will be transferred as it is processed.

Task 2: Solar Energy/Meteorological Training Program

The annual graduate course Geo. S. 6932 "Meteorology for Solar and Wind Energy" was taught in the Spring quarter. Nine students were registered, four from outside the department (representing various engineering schools) A list of term projects done by the students follows:

Direct Beam Models with Cloud Cover Effects.
Diffuse vs Direct or Global and % Sunshine.
Global Tilted Models vs Measured.
Global Regression Models vs Measured.
Integrating Nephelometer B_{scat} vs Radiation and Turbidity.
UV/Global Ratios vs Air Mass and Cloud Cover.
RG630/Total Global and Direct vs Air Mass and Cloud Cover.

A workshop for NOAA personnel, regional, and state energy office people and state climatologists within the region is scheduled for September. The program will concentrate on energy and climate applications of solar radiation.

The NSF minority graduate training proposed "Graduate Research Opportunities in Atmospheric and Terrestrial Sciences" is under review, and appears to be favorably received on the basis of site visits and reviews.

Task 3: Instrumentation and Monitoring Techniques Research

An instrument trailer has been acquired. Mounting the portable monitoring unit system on this trailer for easier portability is underway. Problems with the MARS data logger tape transport appear to have been corrected. Analysis software for the MARS system output will begin.

The all-sky camera system has been in operation for several months and is operating well. A student has begun quantitative analyses of these data.

A photocell direct beam radiometer has been designed and is undergoing field tests. It appears to compare quite closely with NIP readings (generally $\leq$5% error). The basic unit and filters for the automated sun photometer are in, but components for a μA current amplifier to yield suitable voltage level output signals has to be constructed.

The automatic sunshine duration recorder system integrating signals over 200 W/m^2 threshold from a NIP is now in operation and generally compares favorably with the Campbell-Stokes sunshine duration data. A fairly large scatter in a regression type relationship has been found under partly cloudy conditions, especially at near-sunrise or near-sunset periods. Further comparisons will continue and results will be presented in later reports.

Two types of graphics programs have been implemented to aid in the quality control of data and in the analysis of relationships among the data. These two types are time series comparisons, illustrated by Figure 1 and regression plots, illustrated by Figures 3 and 4. Figures 5 and 6 show time series comparisons of observed and model data. Other time series plots of this type were presented in the previous quarterly report. Figures 7-18 show regression plot comparisons of modeled and measured radiation for spring, summer, and winter months. These figures show that the Bird model direct relation does slightly better than the Watt model. For global radiation, the Watt model does only slightly better than a percent sunshine linear regression model of the form Global = a + b (% SS).

Figures 19-24 compare the isotropic Liu and Jordan tilt model to the Klucher anisotropic, by comparing each against measured tilted data. In

summer (July) the Liu and Jordan is slightly better, in winter (January), the Klucher model does better, and in spring (April), the two models are about equal.

Figures 25-27 show results for the hourly ratios of diffuse to global versus the hourly direct-to-extraterrestrial ratio. This regression was found to be more consistent than others examined such as diffuse/global versus global/extraterrestrial, diffuse/global versus percent sunshine, diffuse/extraterrestrial versus global/extraterrestrial, or diffuse/extraterrestrial versus direct/extraterrestrial.

Figures 28-33 show results of the UV spectral ratio UV (0.30-0.35 μ)/global (0.3-2.8 μ), versus relative air mass and degree of cloud cover. The UV spectral ratio is larger but considerably more variable under overcast conditions than in clear skies.

Figures 34-39 show the RG630 global spectral ratio global (0.63-2.8 μ)/global (0.3-2.8 μ) versus relative air mass and degree of cloud cover. The RG630 global spectral ratio is smaller but considerably more variable under overcast or partly cloudy conditions than in clear skies.

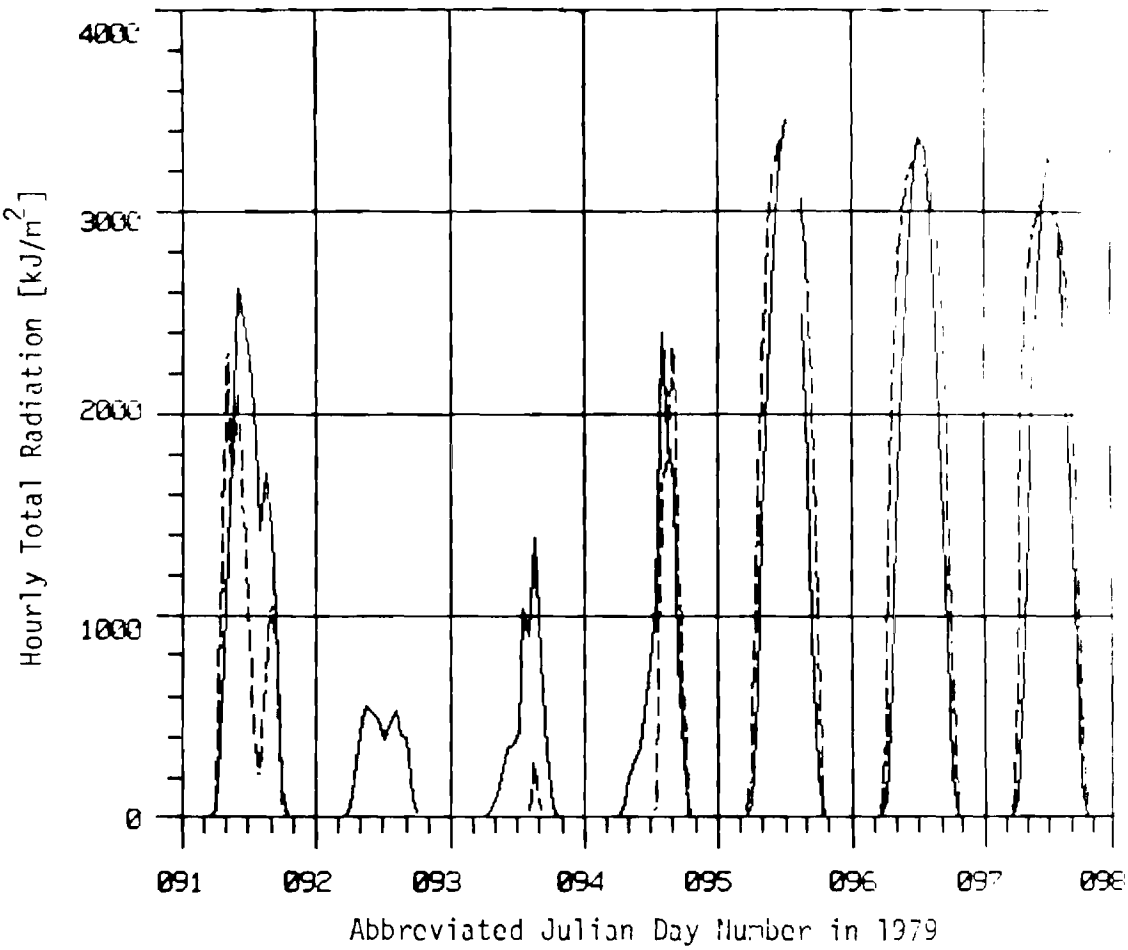


Figure 1. Illustration of Quality Control Graphics Program Time Series Output. Comparison of hourly global (solid line) and direct normal (dashed line) radiation for seven days in April 1979.

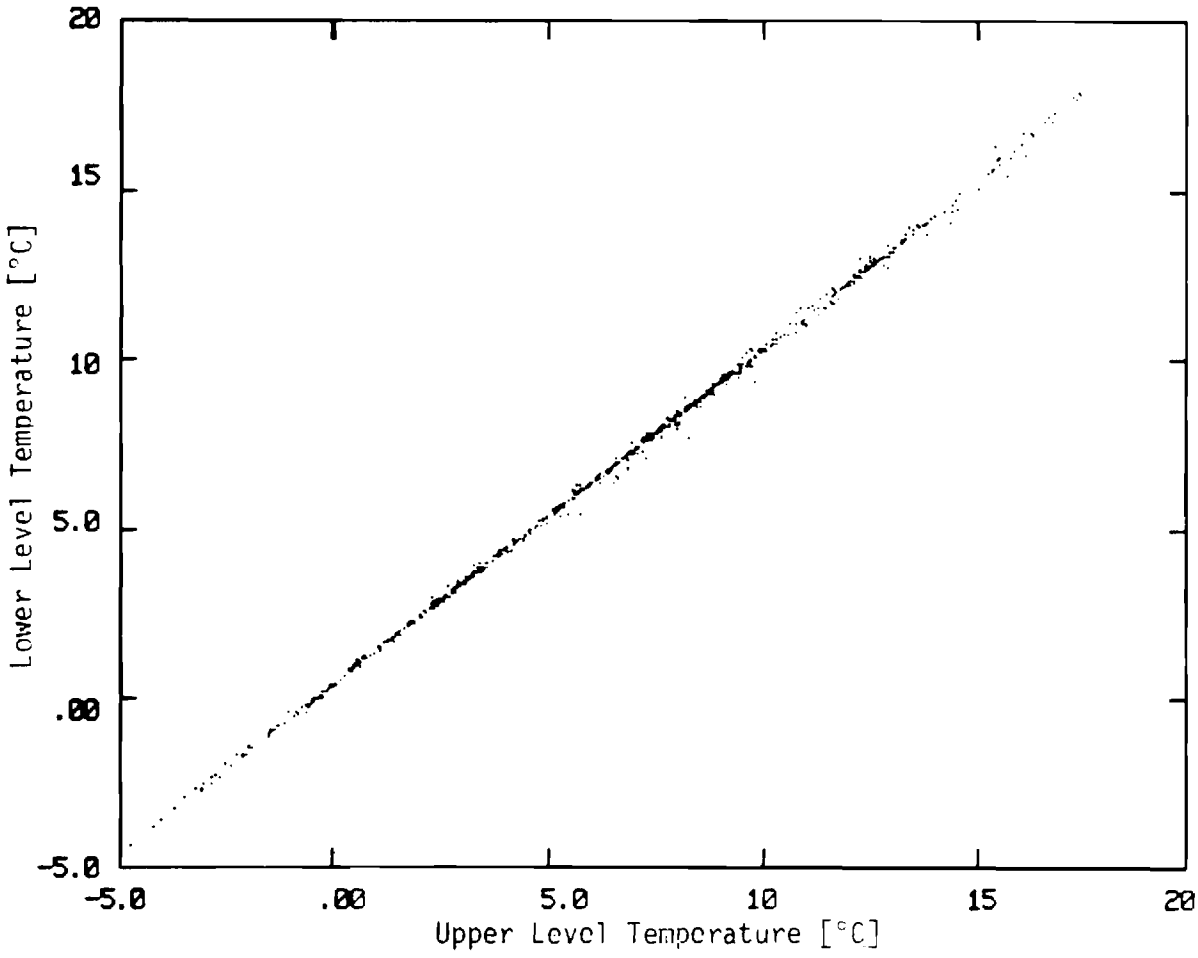


Figure 2. Example of Quality Control Graphics Program Linear Regression Output. Comparison of upper and lower level temperatures on tower for full month of January 1980. Regression slope = 0.99, regression standard error = 0.13°C.

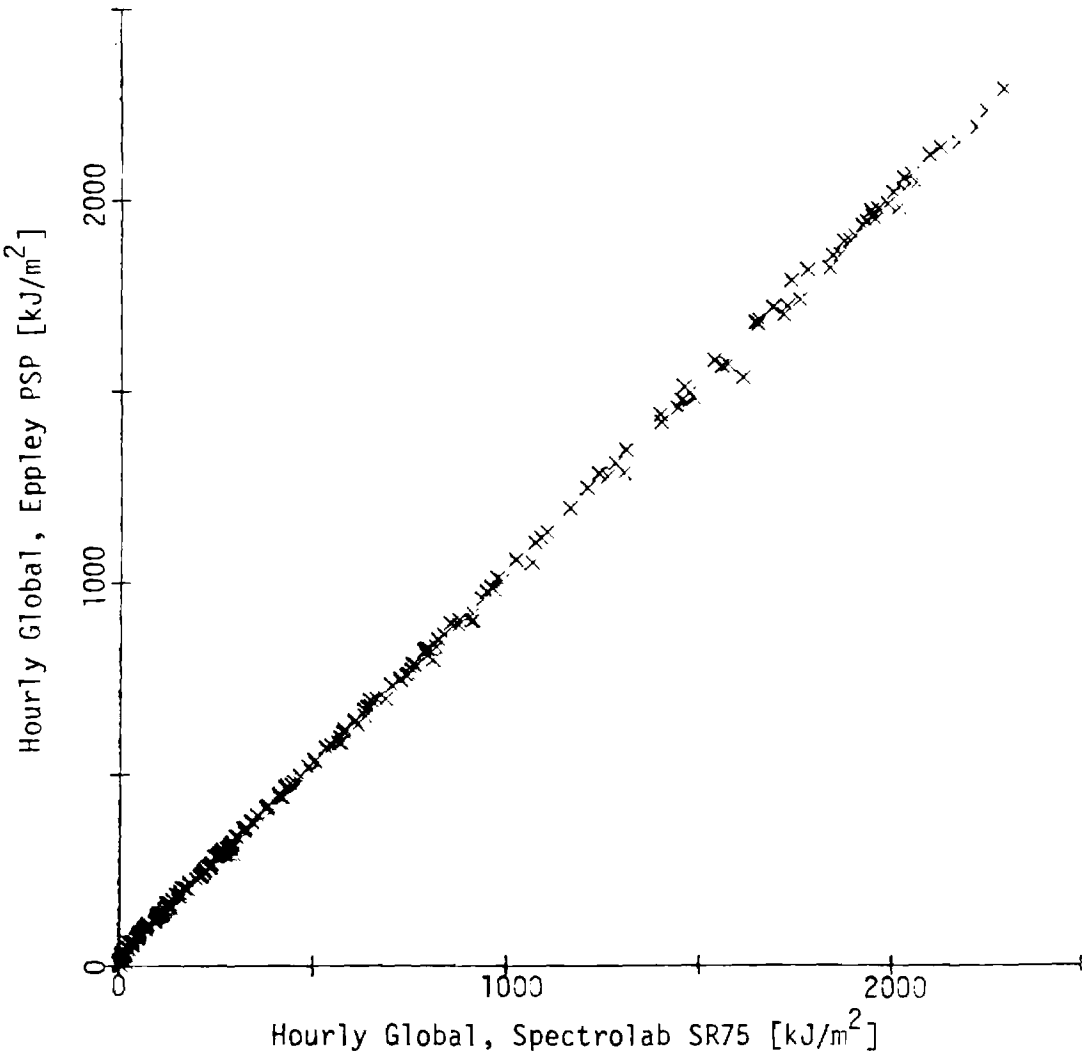


Figure 3. As in Figure 2 for primary global (PSP) versus Secondary global (SR75).

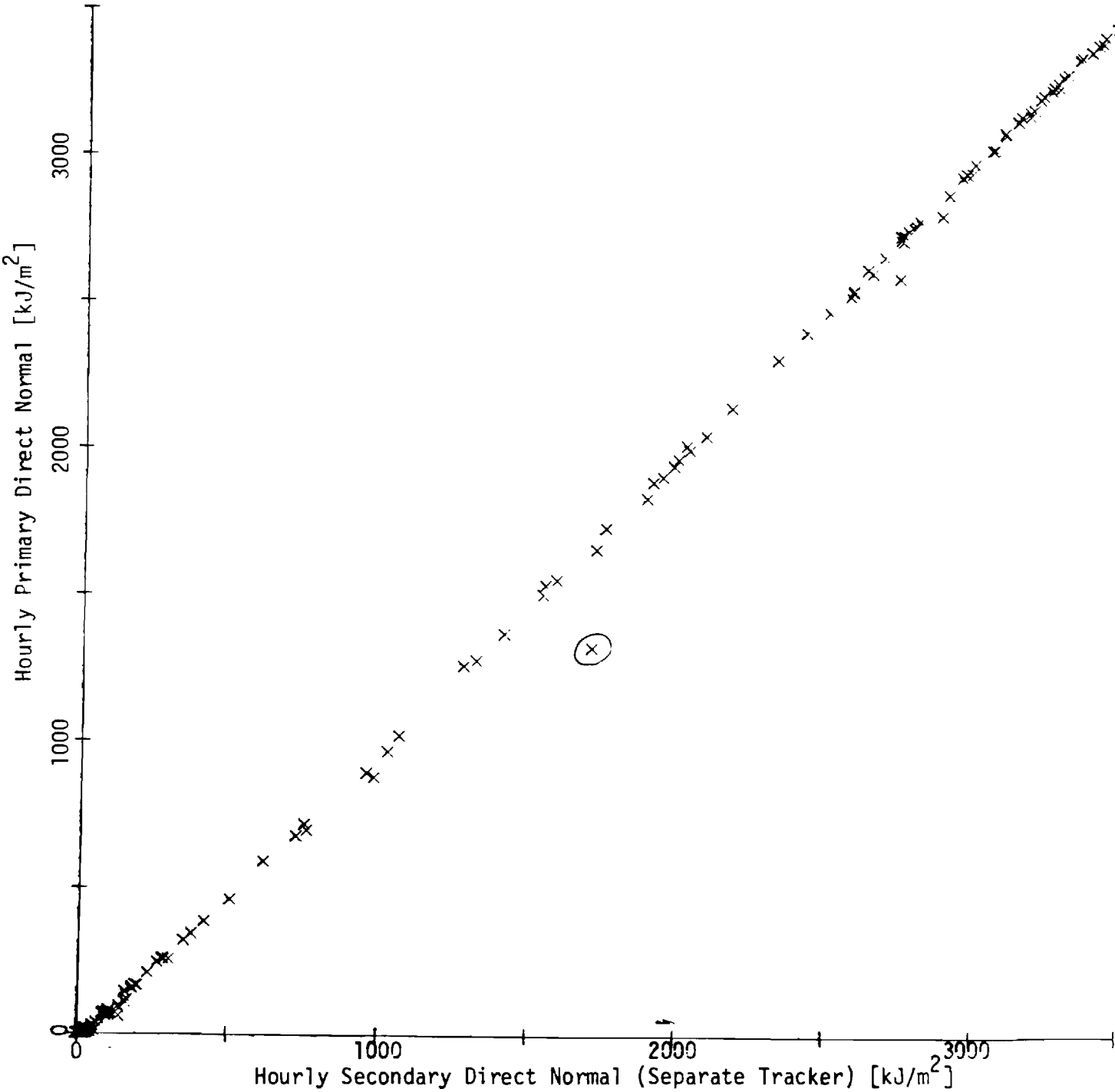


Figure 4. As in Figure 2 for Primary and Secondary Direct Normal (2 NIP's on Separate Trackers). Note erroneous point circled to be edited out of data.

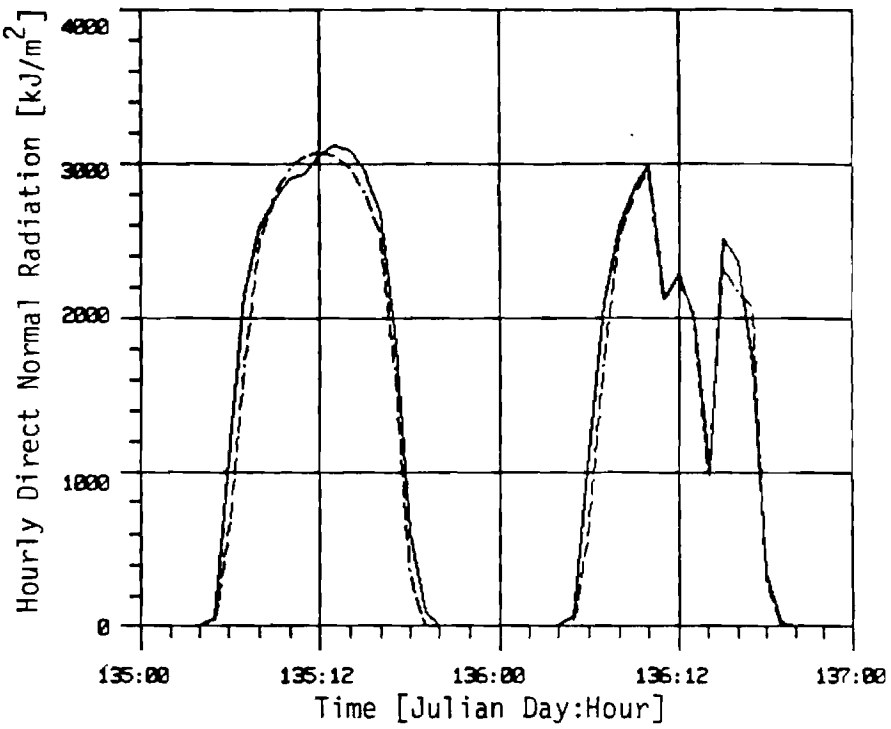


Figure 5. Observed (solid line) and Modeled (dashed line) Hourly Direct Solar Beam Intensities for Day 135 (clear) and Day 136 (partly cloudy).

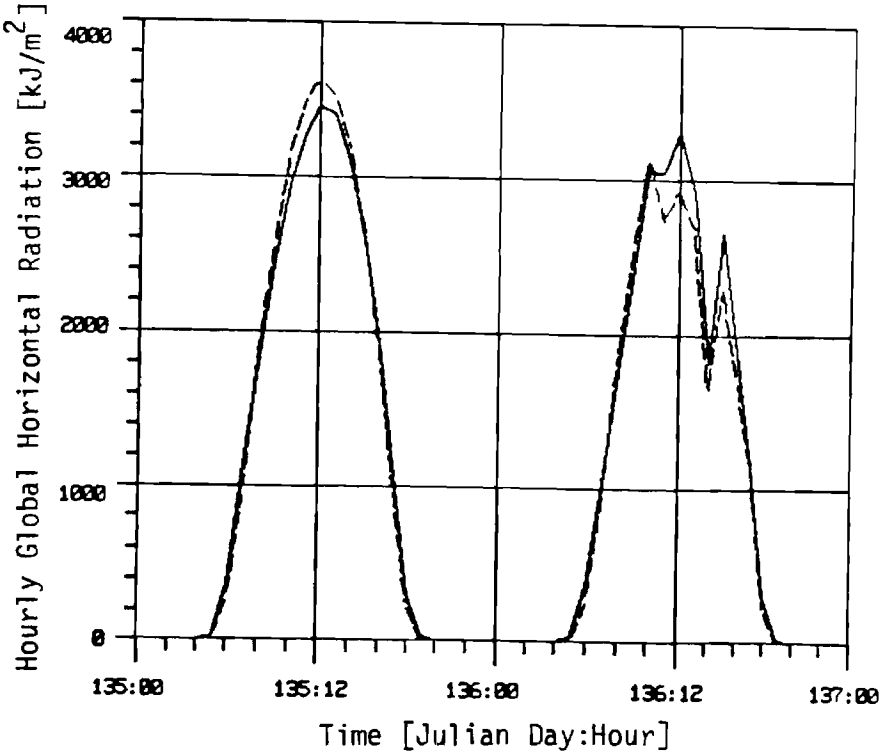


Figure 6. As in Figure 5 for Global Horizontal Radiation.

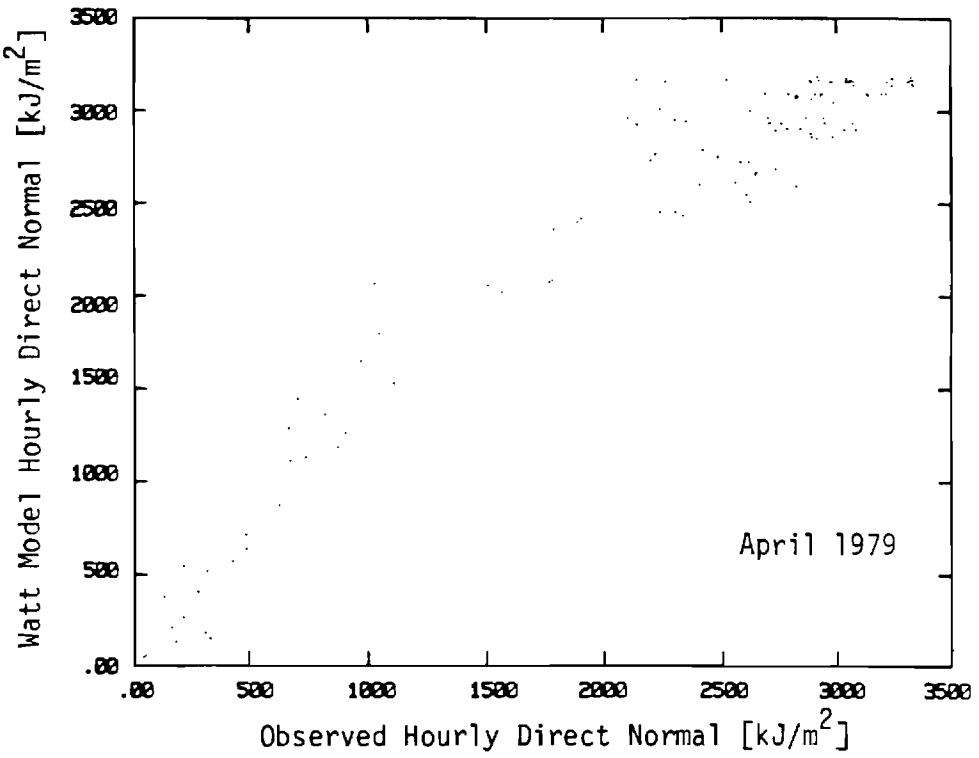


Figure 7. Watt Model Hourly Direct Normal Versus Observed for April 1979. Regression slope = 1.01, regression standard error = 328 kJ/m^2.

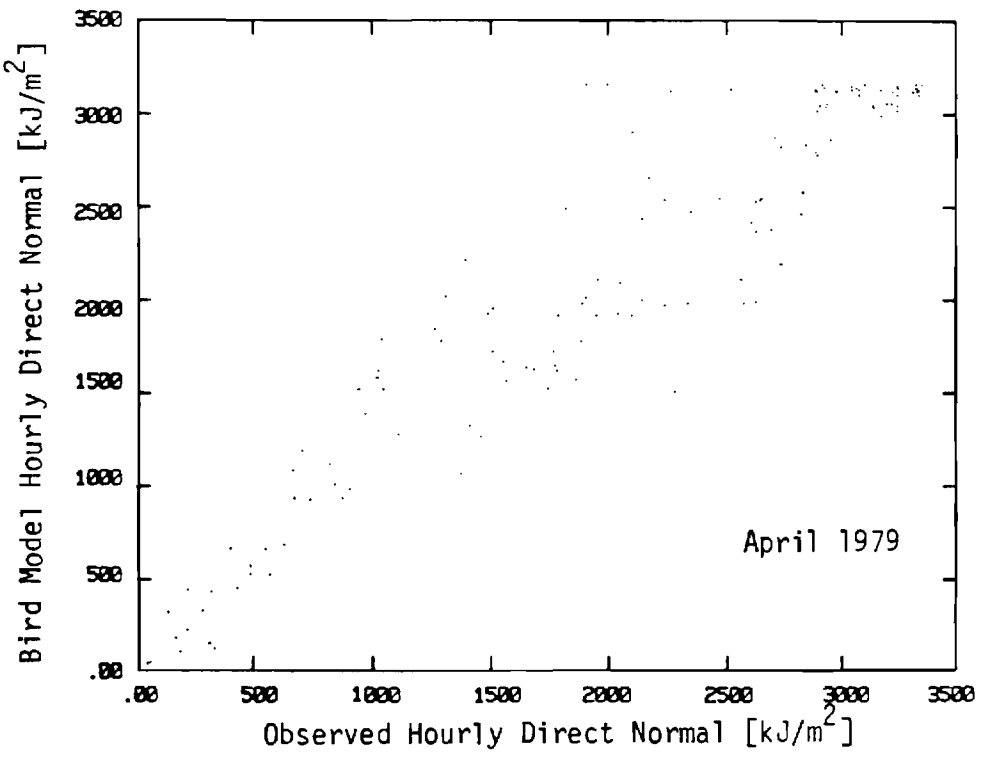


Figure 8. Bird Model Hourly Direct Normal Versus Observed for April 1979. Regression slope = 0.97, regression standard error = 288 kJ/m^2.

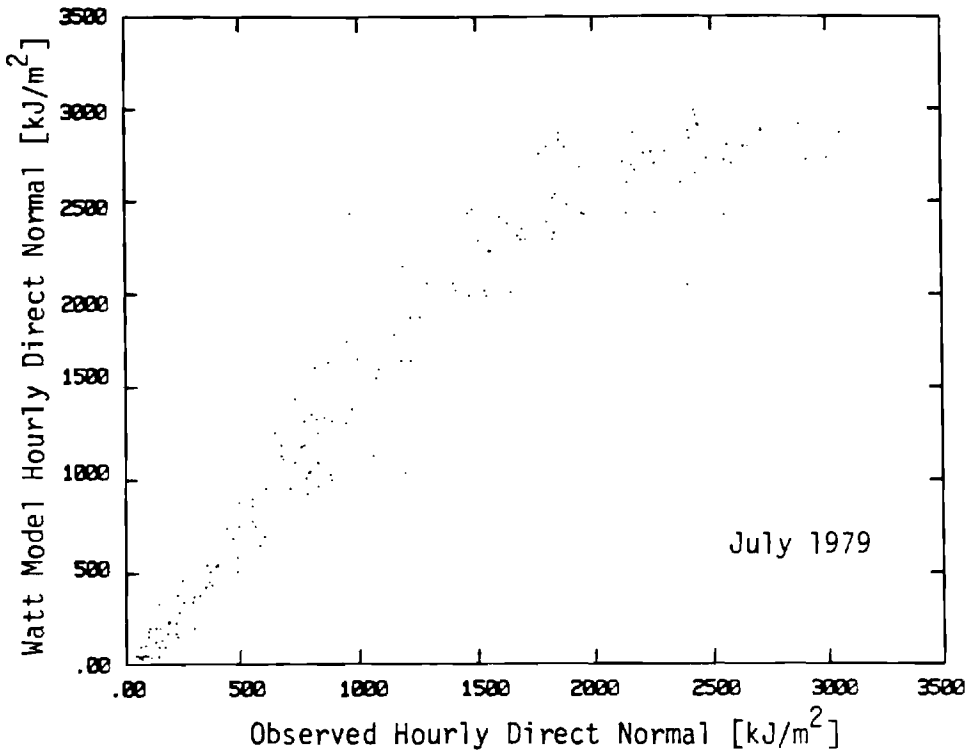


Figure 9. As in Figure 7 for July 1979. Regression slope = 1.16, regression standard error = 287 kJ/m^2.

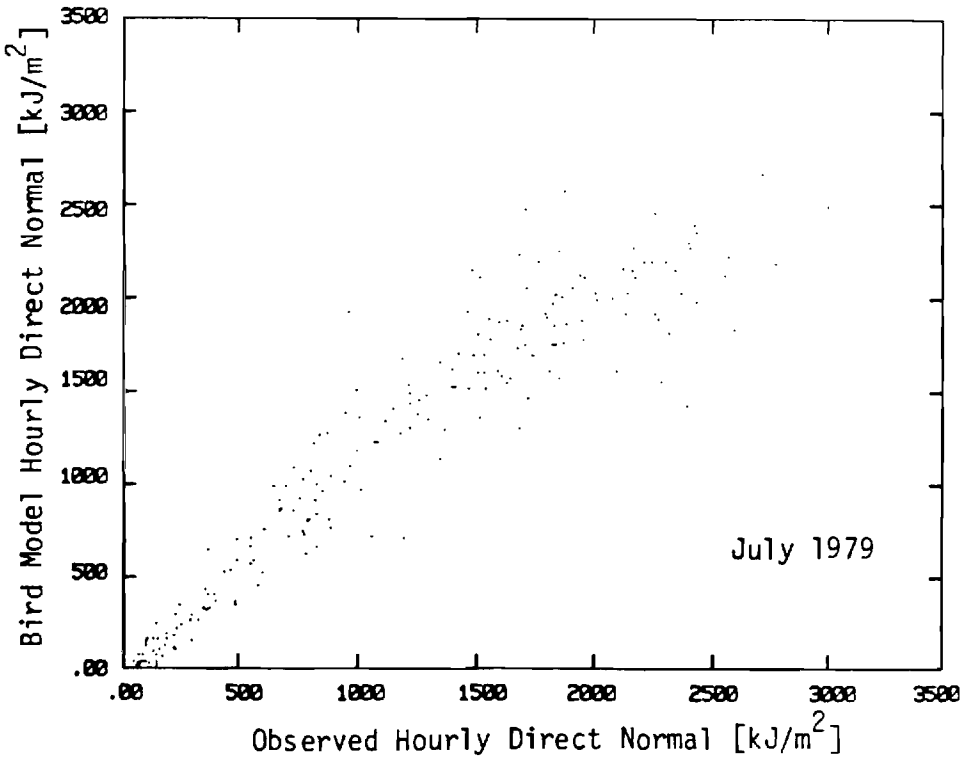


Figure 10. As in Figure 8 for July 1979. Regression slope = 0.96, regression standard error = 218 kJ/m^2.

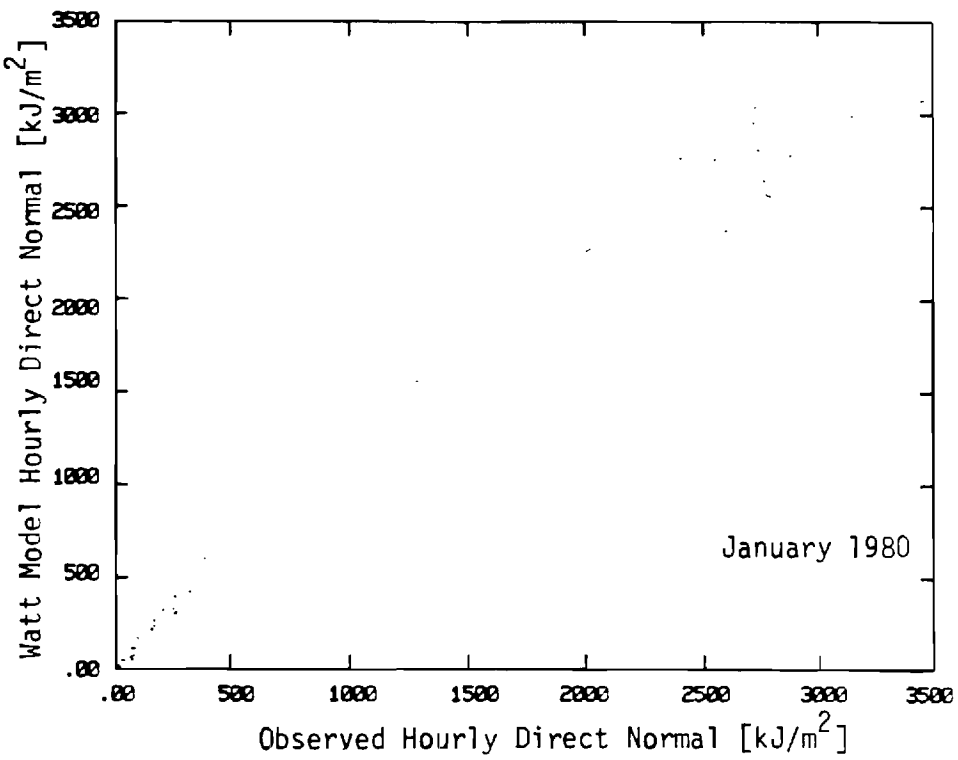


Figure 11. As in Figure 7 for January 1980. Regression slope = 0.95, regression standard error = 200 kJ/m^2.

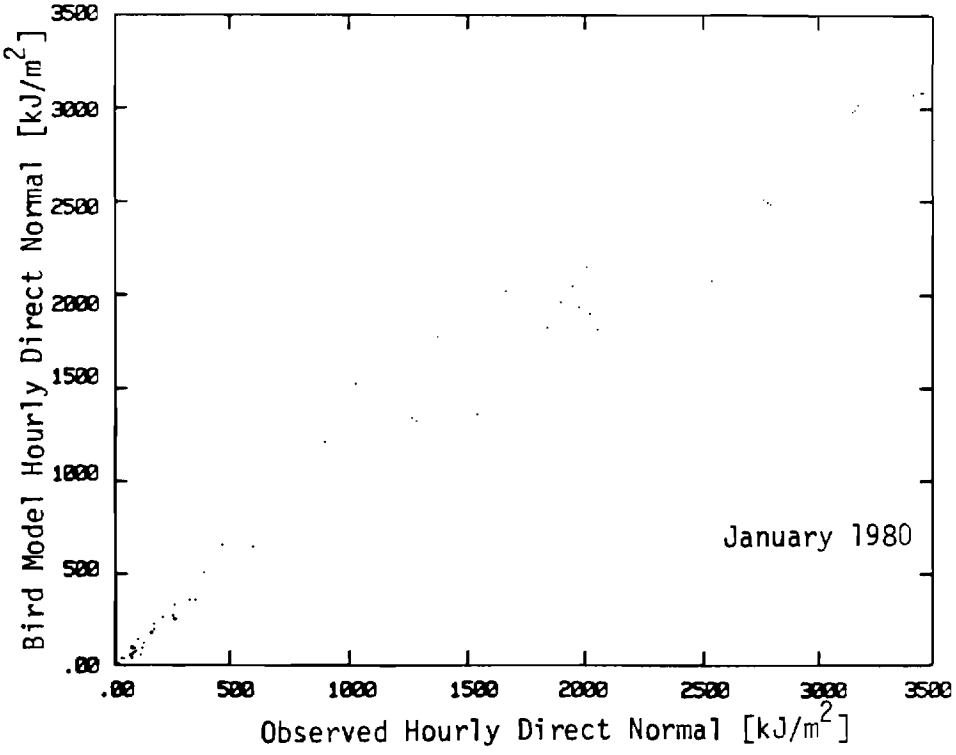


Figure 12. As in Figure 8 for January 1980. Regression slope = 0.91, regression standard error = 162 kJ/m^2.

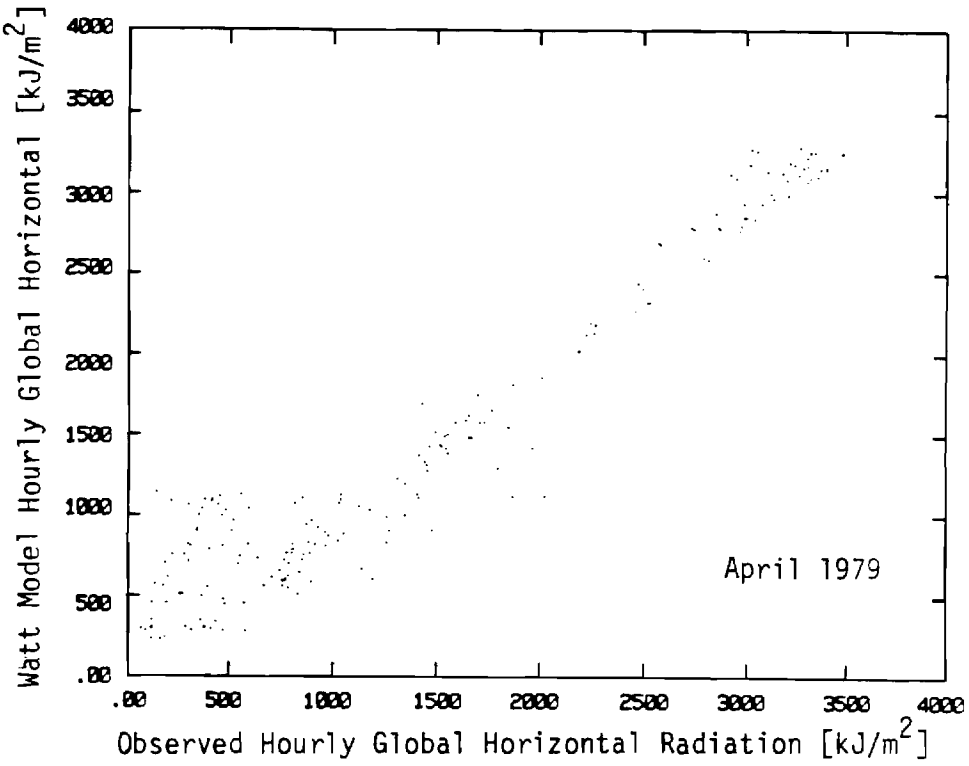


Figure 13. Watt Model Hourly Global Horizontal Radiation Versus Observed for April 1979. Regression slope = 0.86, regression standard error = 256 kJ/m^2.

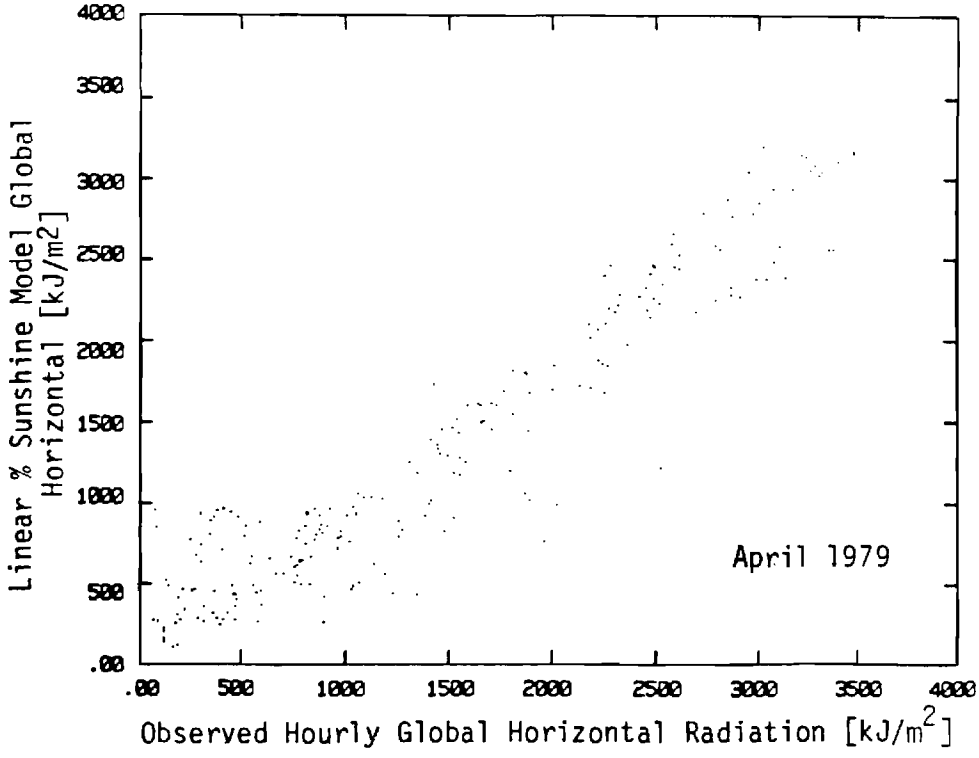


Figure 14. Linear % Sunshine Model Hourly Global Horizontal Radiation Versus Observed for April 1979. Regression slope = 0.85, regression standard error = 282 kJ/m^2.

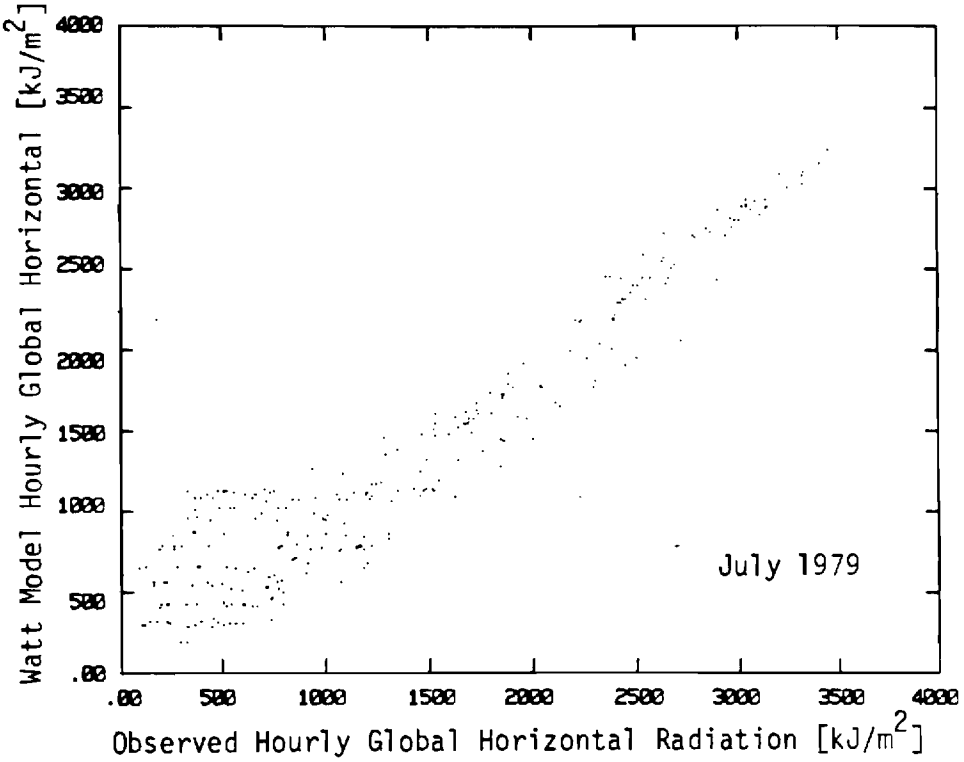


Figure 15. As in Figure 13 for July 1979. Regression slope = 0.82, regression standard error = 274 kJ/m^2.

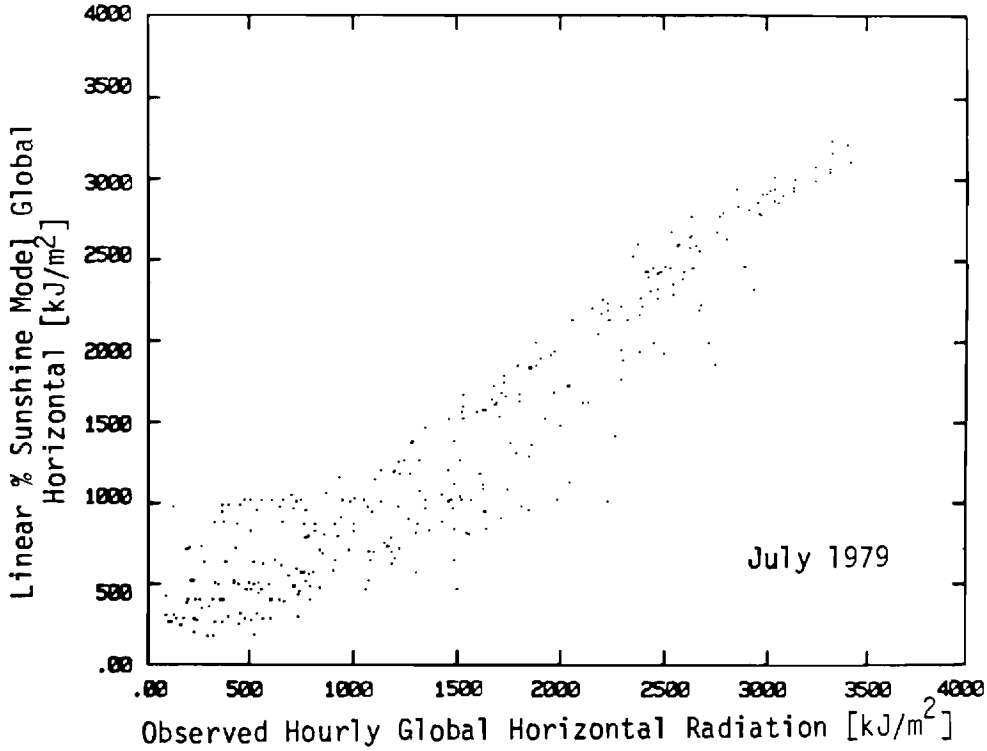


Figure 16. As in Figure 14 for July 1979. Regression slope = 0.88, regression standard deviation 285 kJ/m^2.

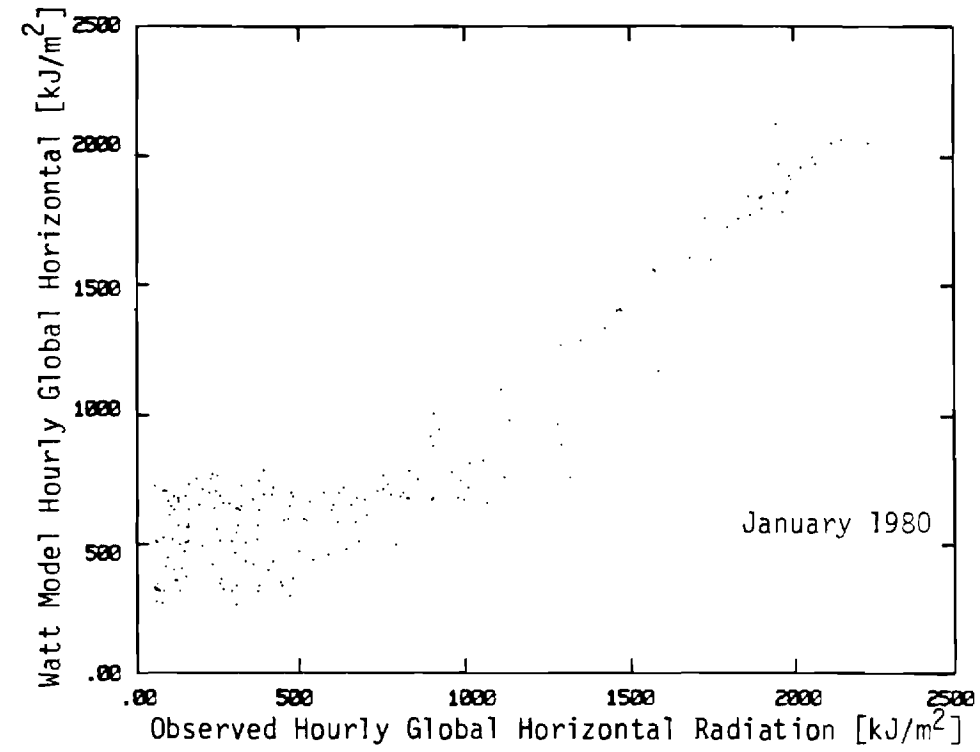


Figure 17. As in Figure 13 for January 1980. Regression slope = 0.73, regression standard error = 184 kJ/m^2.

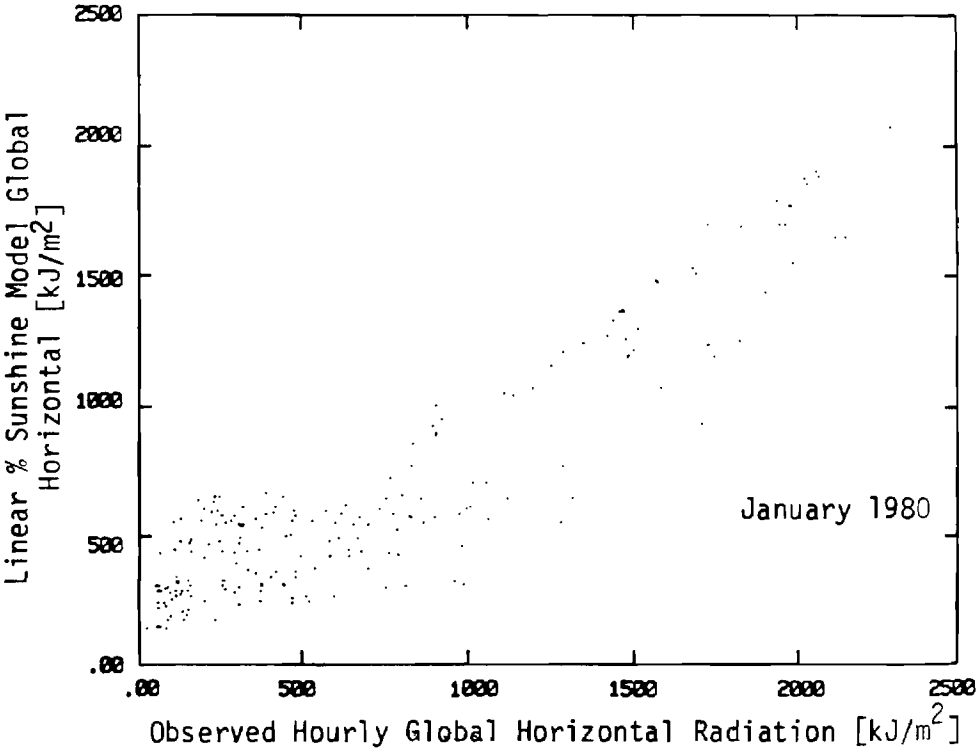


Figure 18. As in Figure 14 for January 1980. Regression slope = 0.72, regression standard error = 188 kJ/m^2.

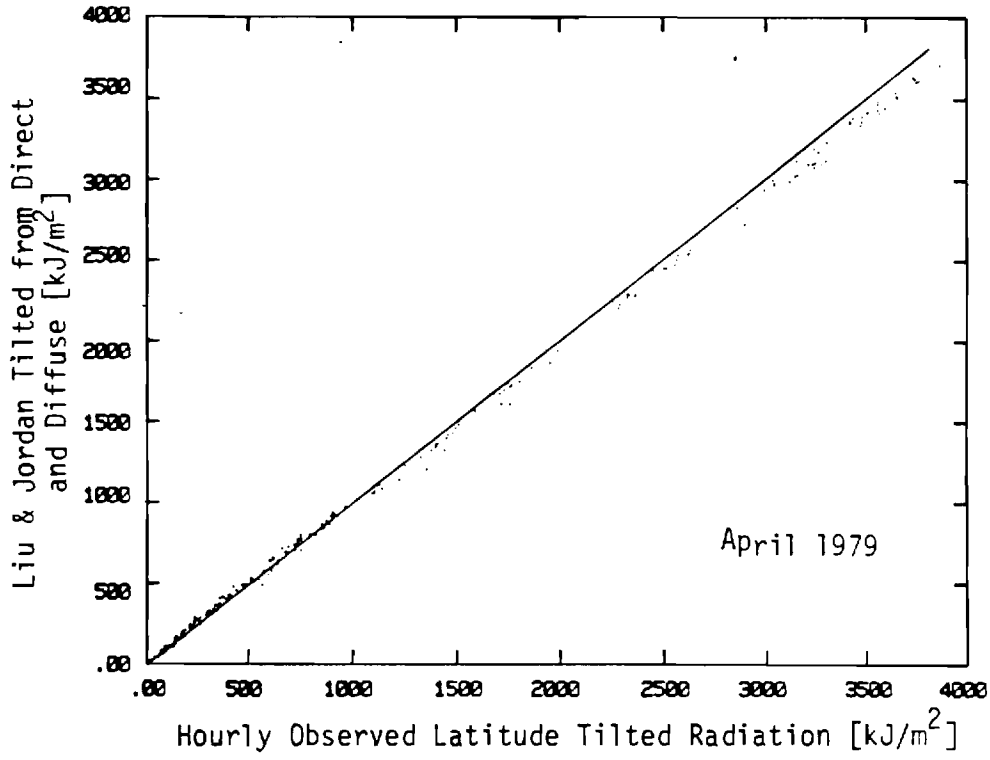


Figure 19. Hourly Liu and Jordan Model Tilted Radiation, from Observed Direct and Diffuse, versus Observed Tilted Radiation for April 1979. Regression slope = 0.96, regression standard error = 32 kJ/m^2.

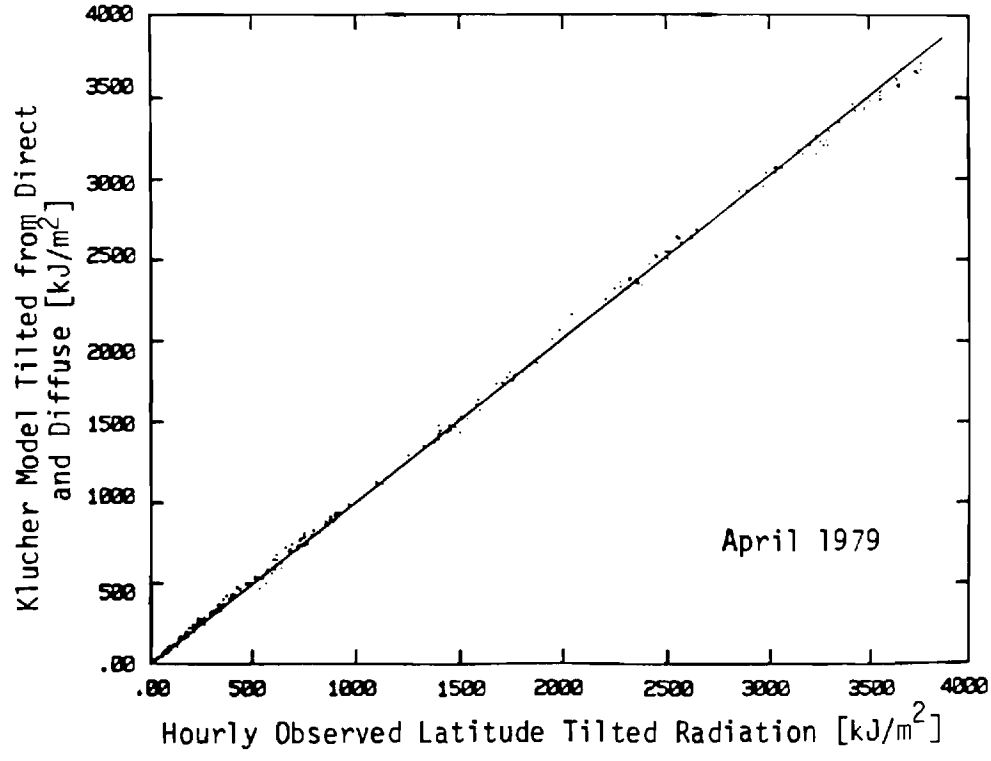


Figure 20. Hourly Klucher Model Tilted Radiation, from Observed Direct and Diffuse, versus Observed Tilted Radiation for April 1979. Regression slope = 0.99, regression standard error = 36 kJ/m^2.

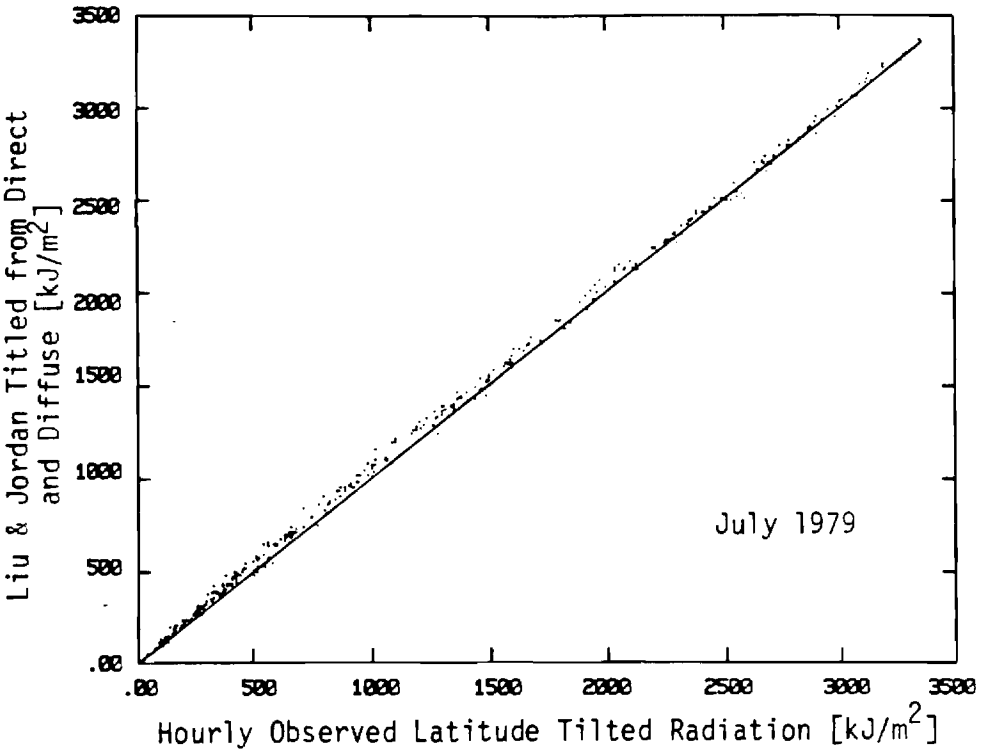


Figure 21. As in Figure 19 for July 1979. Regression slope = 1.00, regression standard error = 32 kJ/m^2.

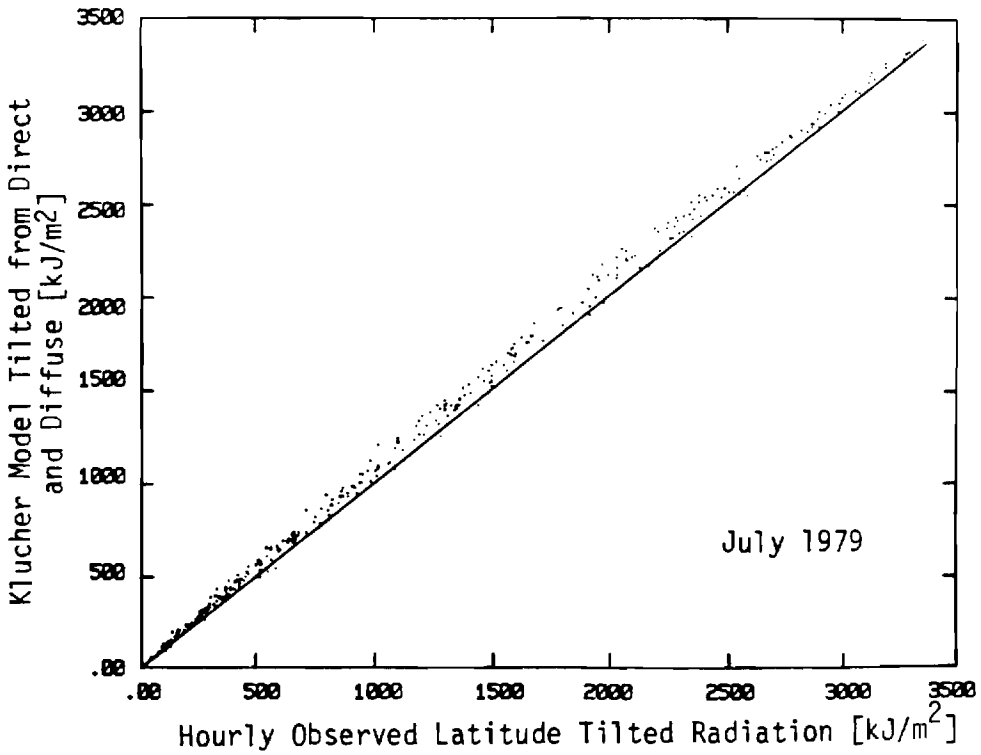


Figure 22. As in Figure 20 for July 1979. Regression slope = 1.02, regression standard error = 45 kJ/m^2.

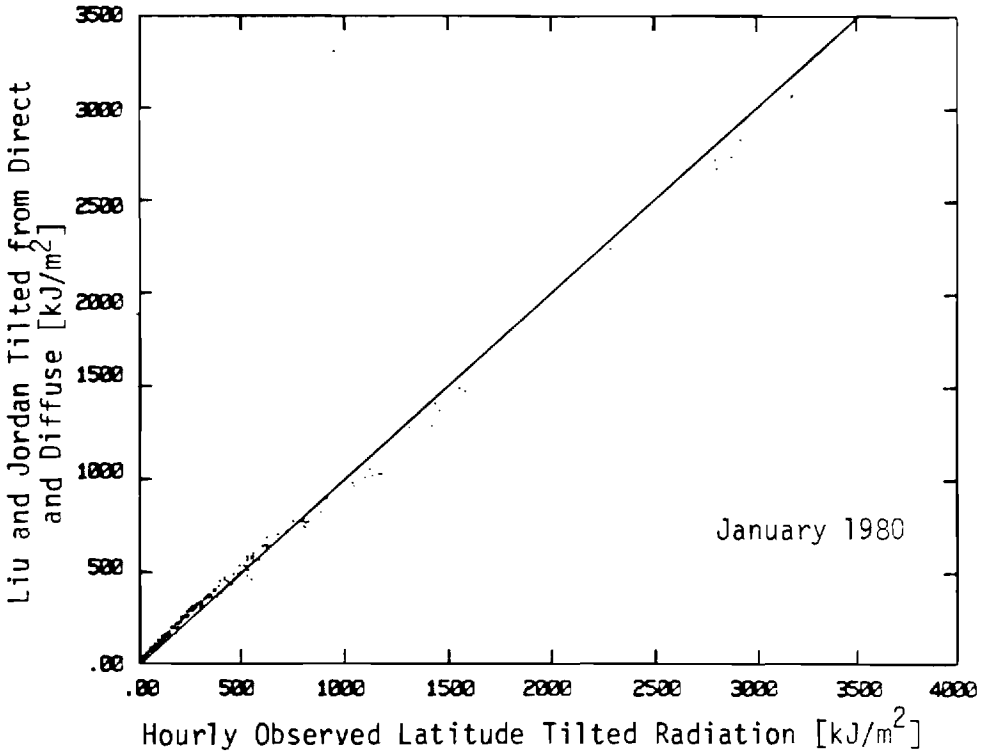


Figure 23. As in Figure 19 for January 1980. Regression slope = 0.95, regression standard error - 45 kJ/m^2.

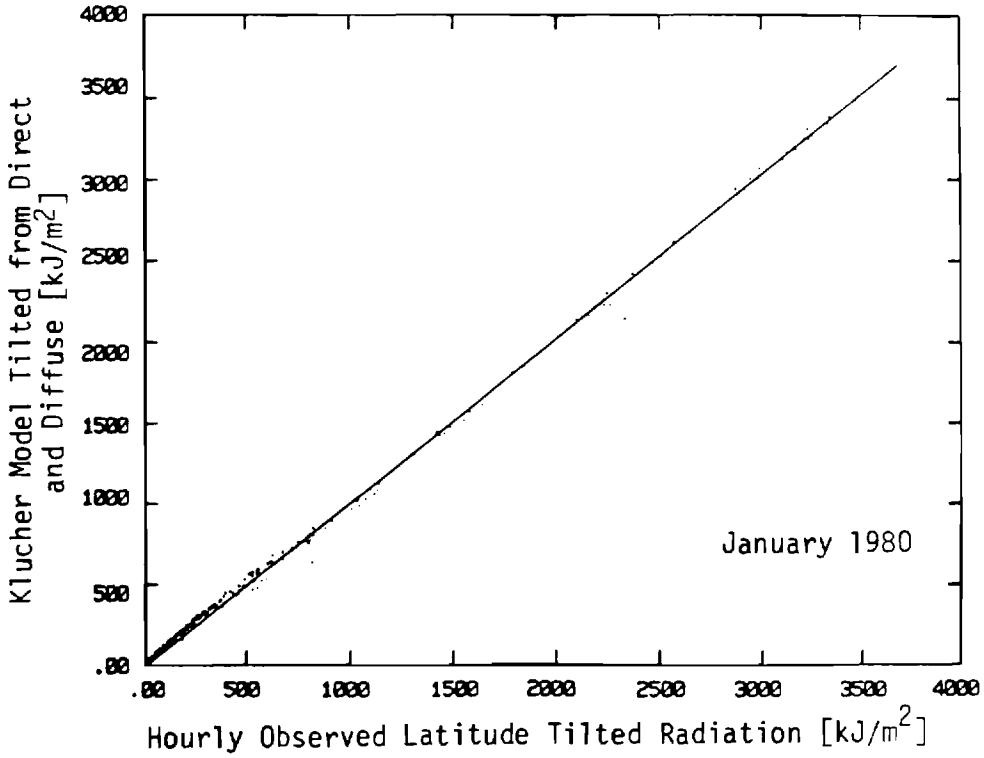


Figure 24. As in Figure 20 for January 1980. Regression slope = 0.99, regression standard error = 35 kJ/m^2.

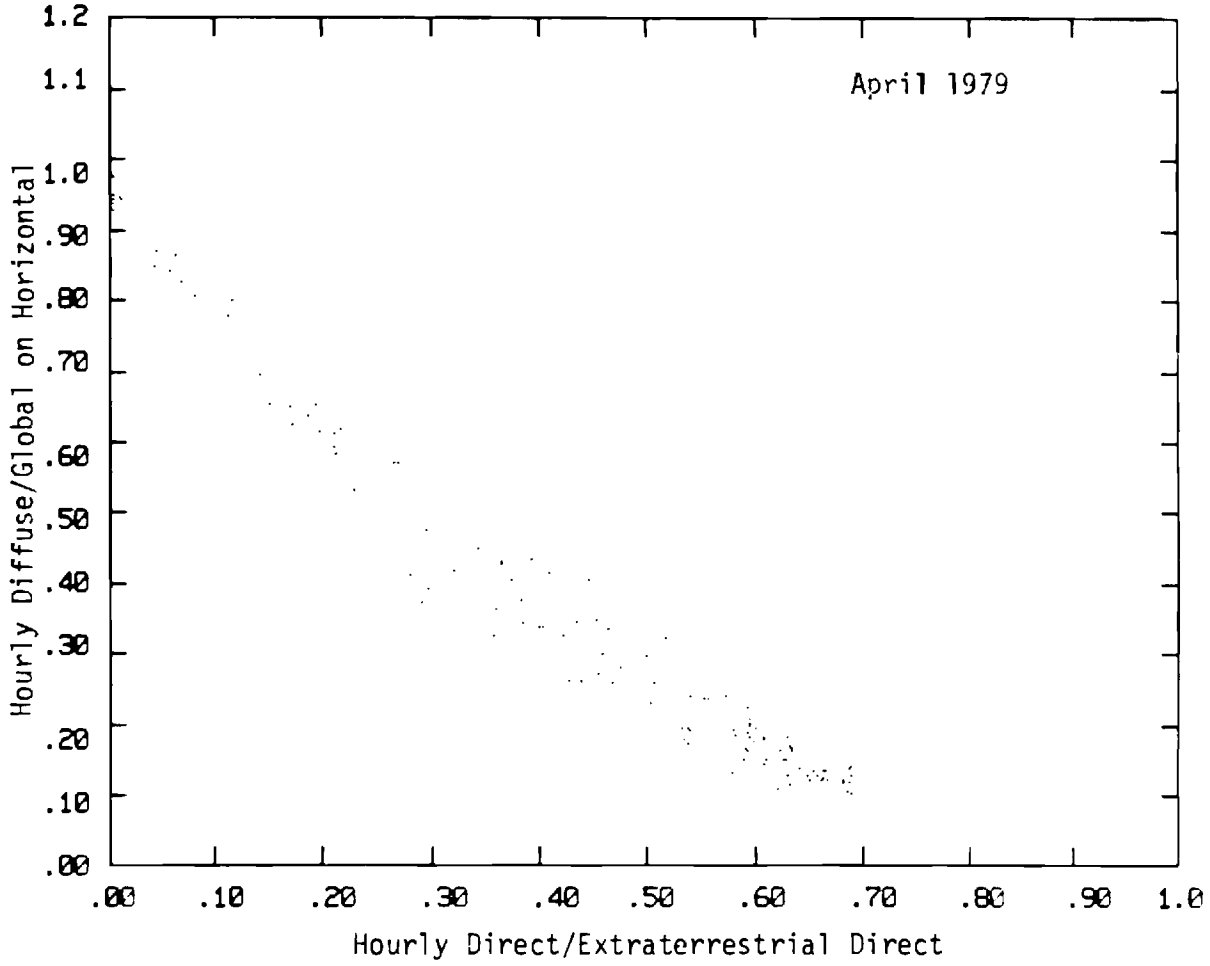


Figure 25. Hourly Diffuse-to-Global Ratio Versus Hourly Direct-to-Extraterrestrial Ratio for April 1979.

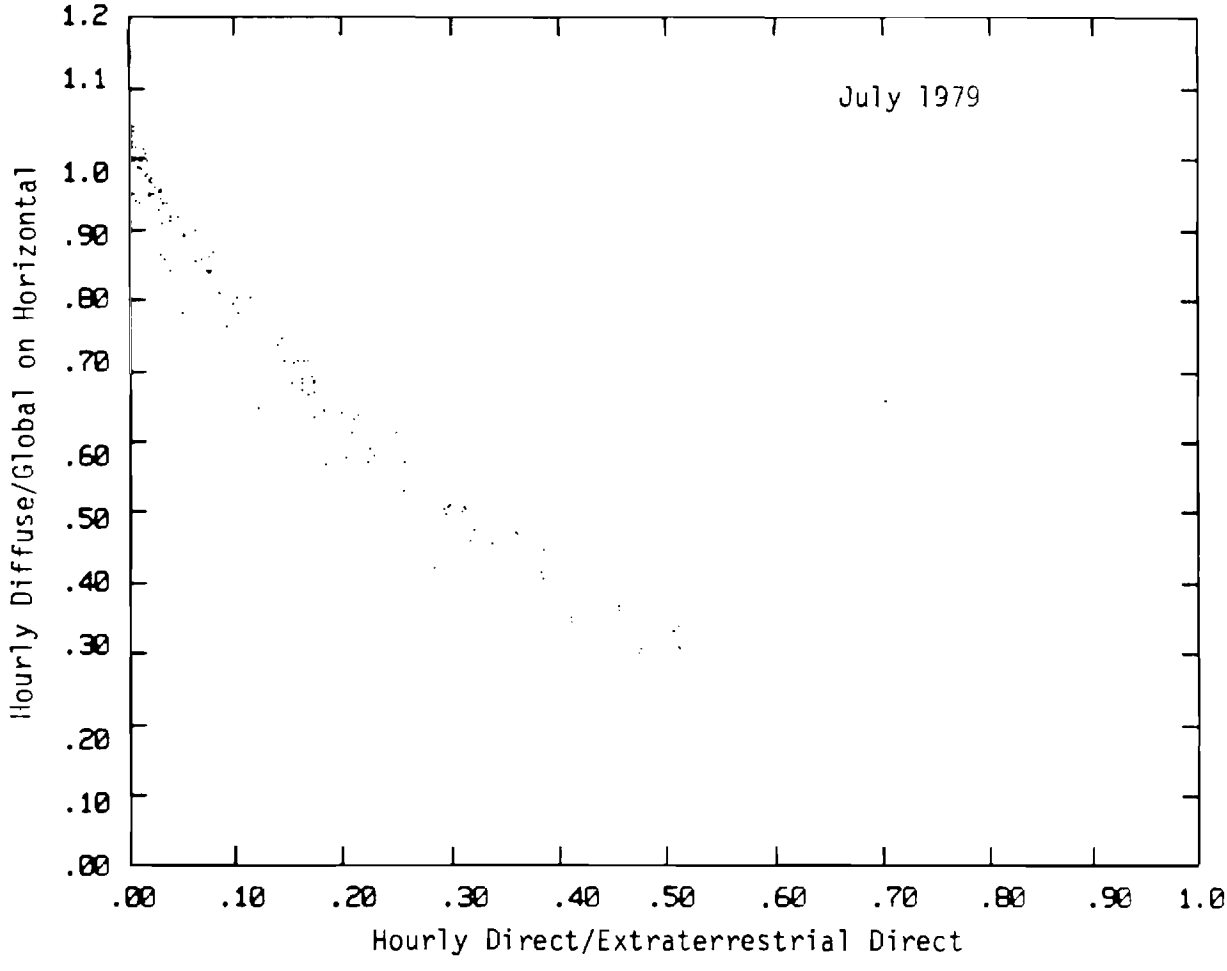


Figure 26. As in Figure 25 for July 1979.

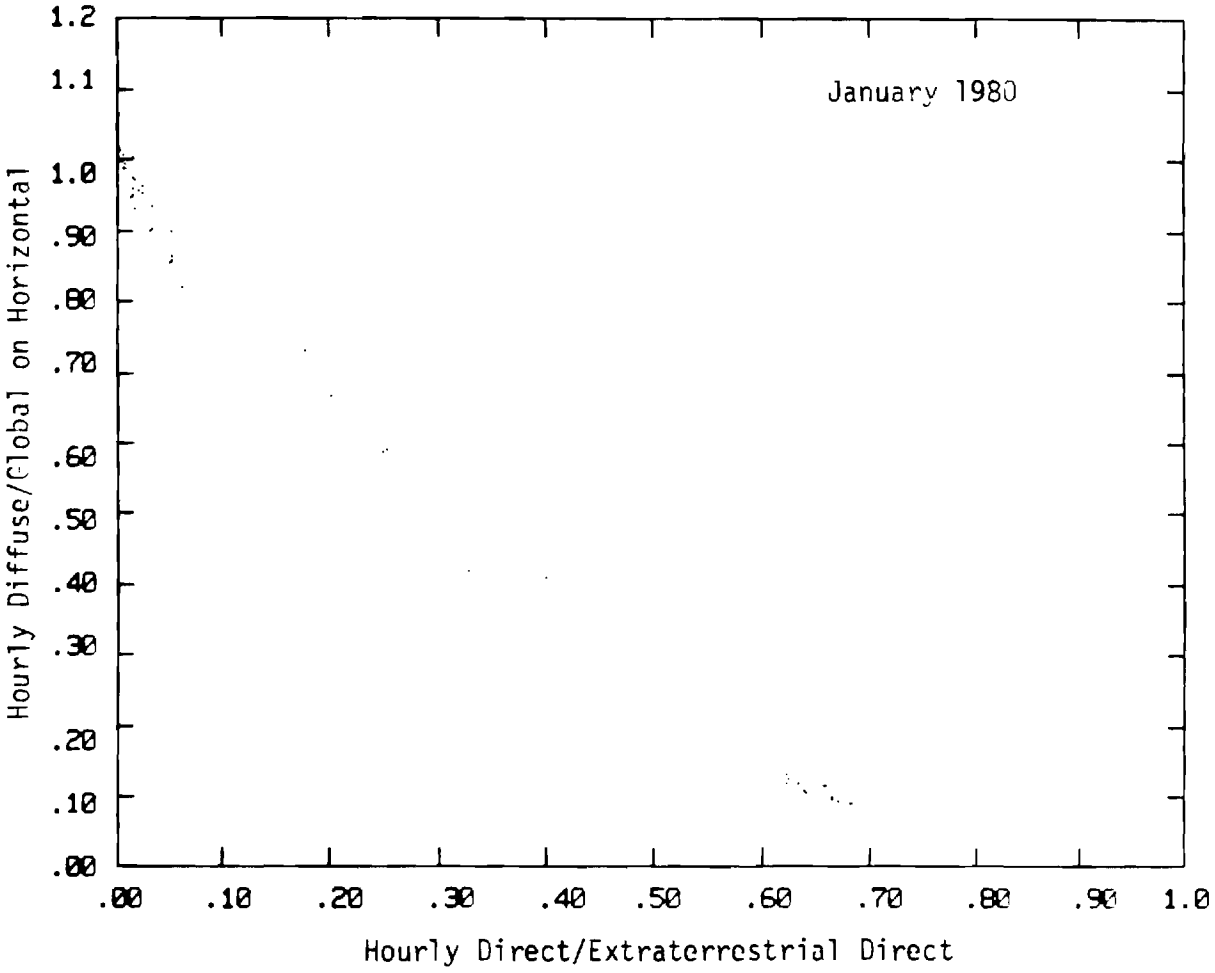


Figure 27. As in Figure 25 for January 1980.

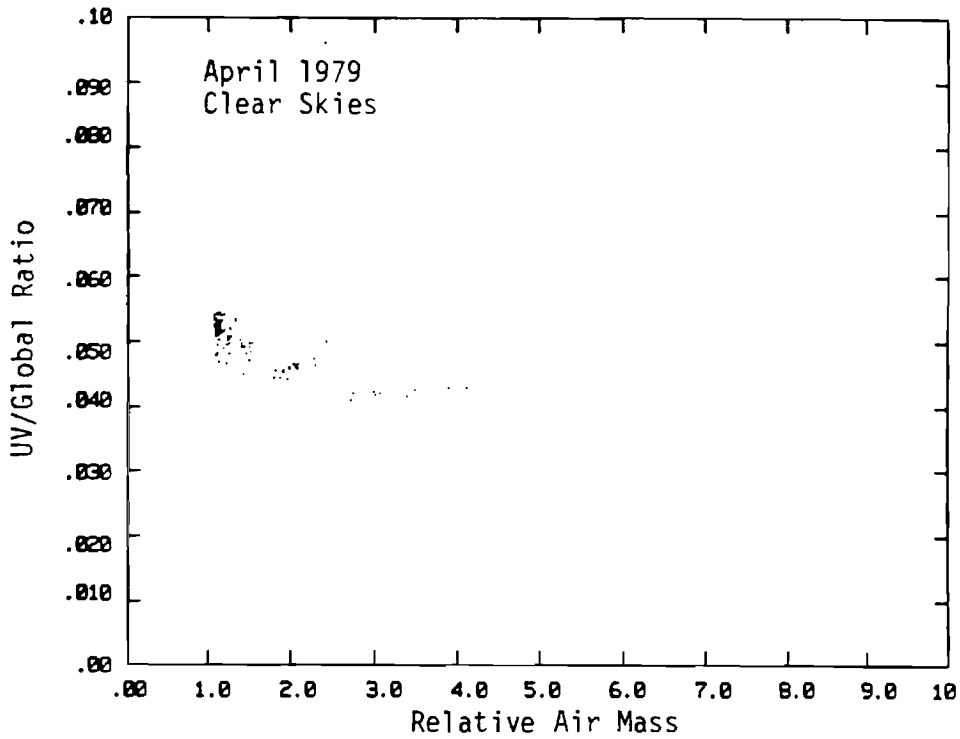


Figure 28. Ratio of UV (0.301-0.39) to Global Horizontal Versus Relative Air Mass for Clear Skies in April 1979.

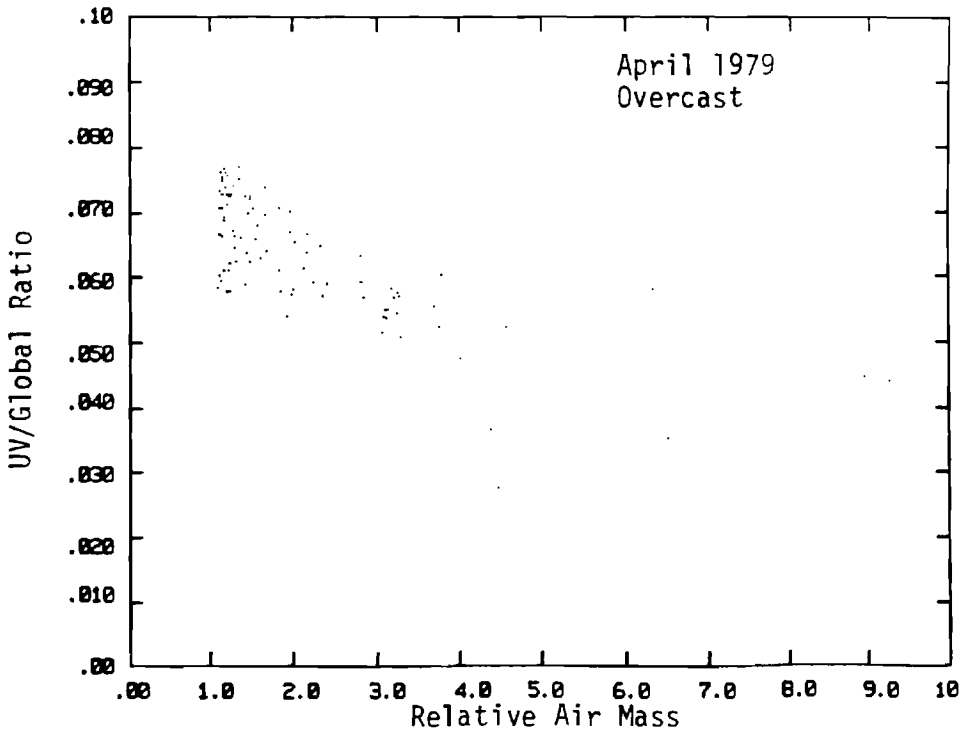


Figure 29. As in Figure 28 for Overcast Skies.

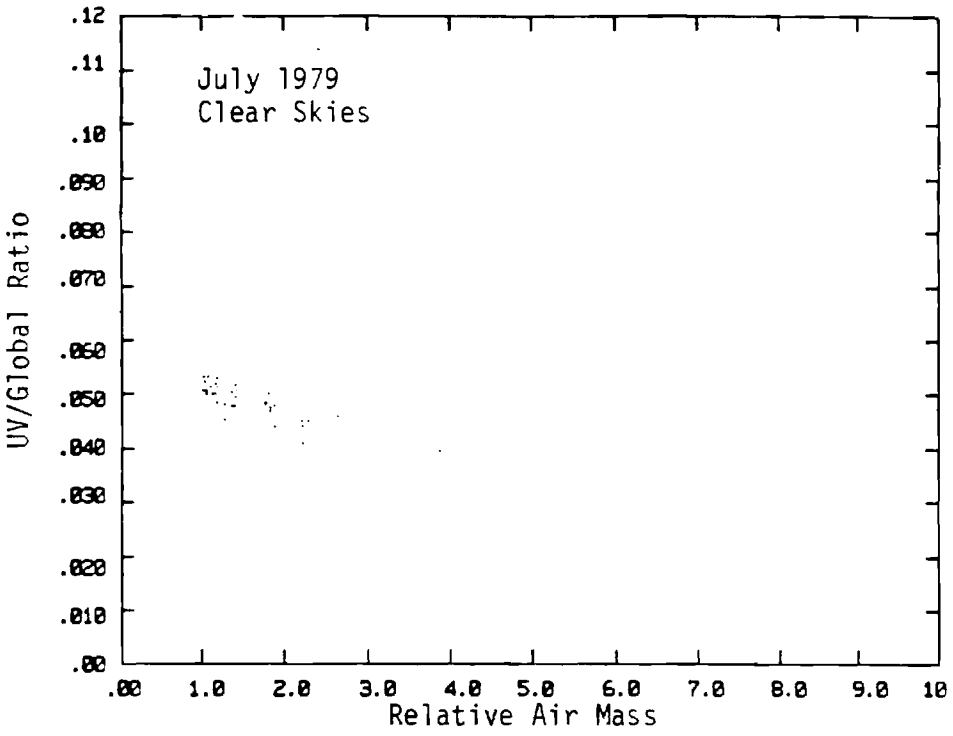


Figure 30. As in Figure 28 for Clear Skies July 1979.

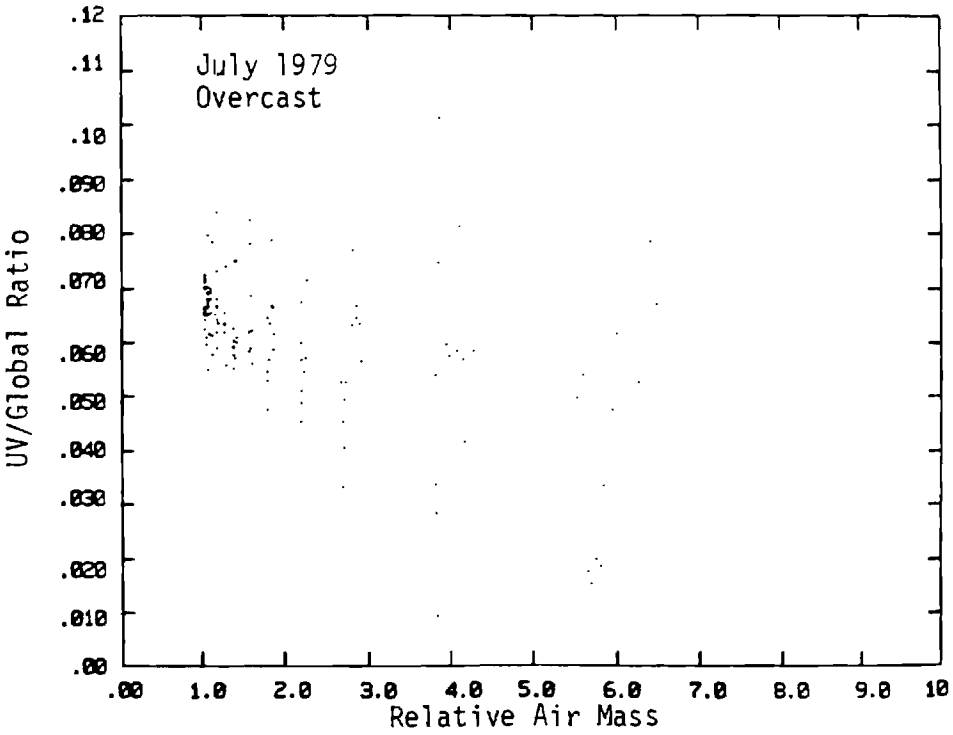


Figure 31. As in Figure 28 for Overcast Skies in July 1979.

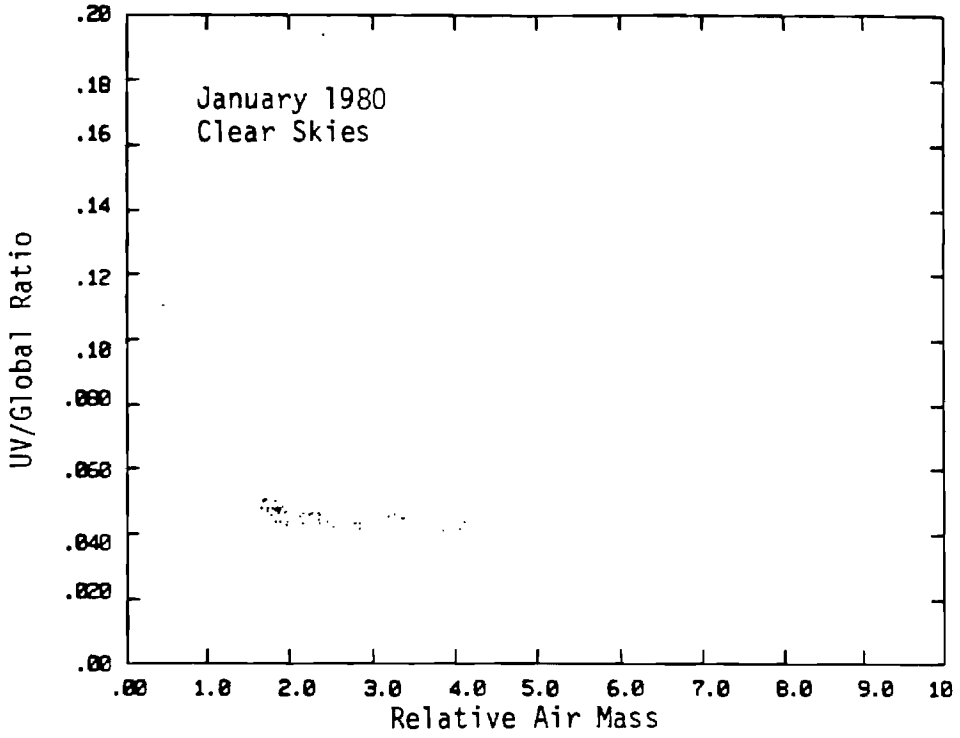


Figure 32. As in Figure 28 for Clear Skies, January 1980.

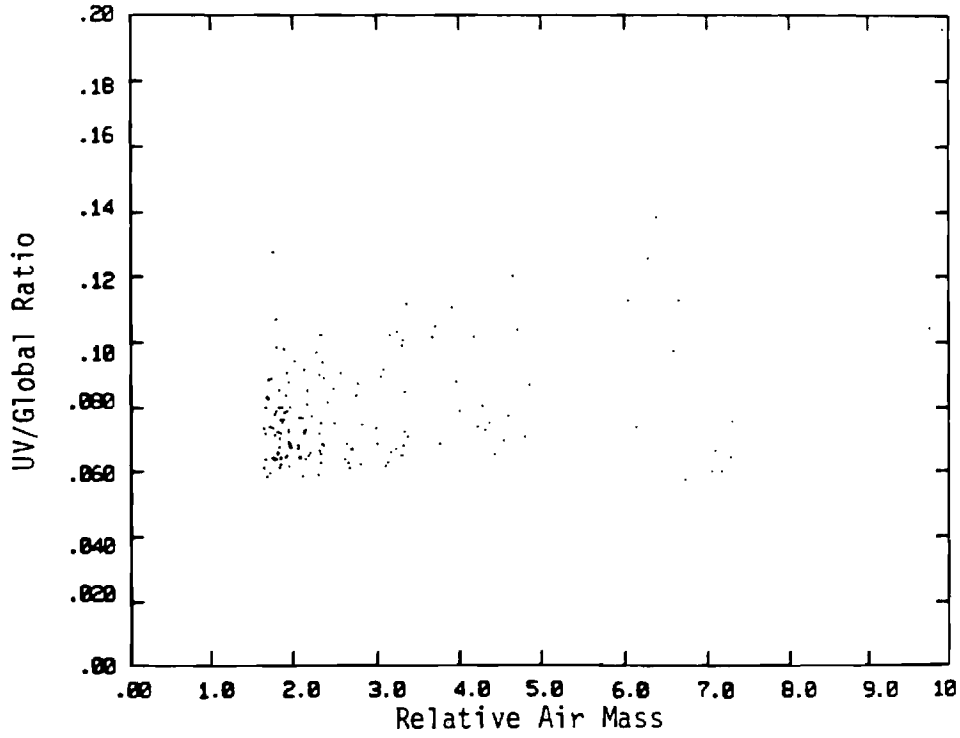


Figure 33. As in Figure 28 for Overcast Skies, January 1980

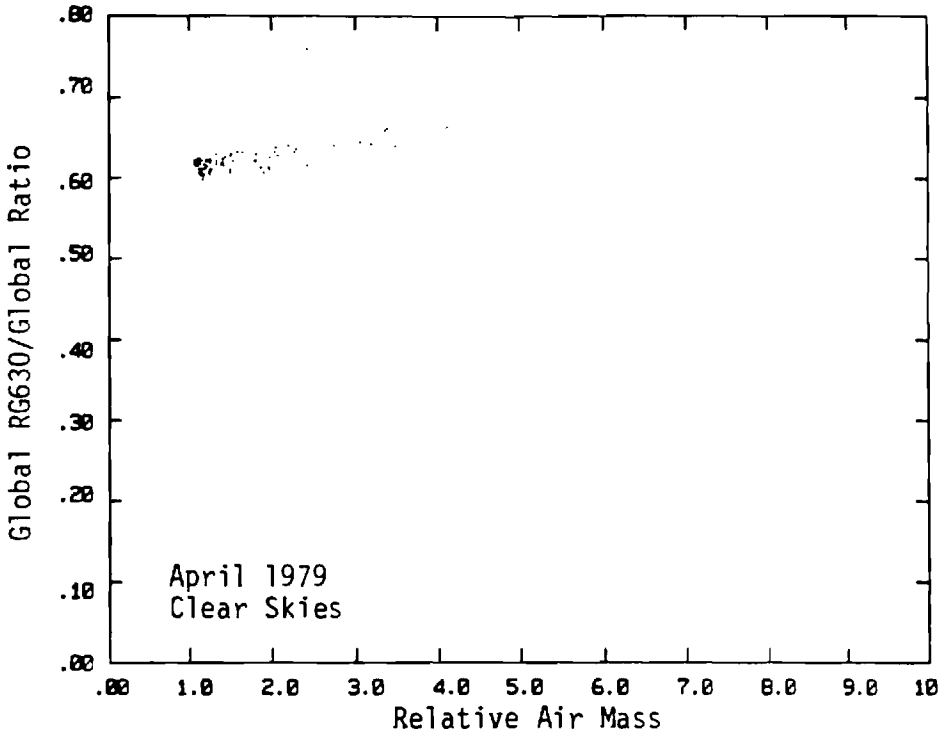


Figure 34. Ratio of Global with RG630 (630 nm cut on) Filter to Full Global Horizontal Versus Relative Air Mass, for Clear Skies in April 1979

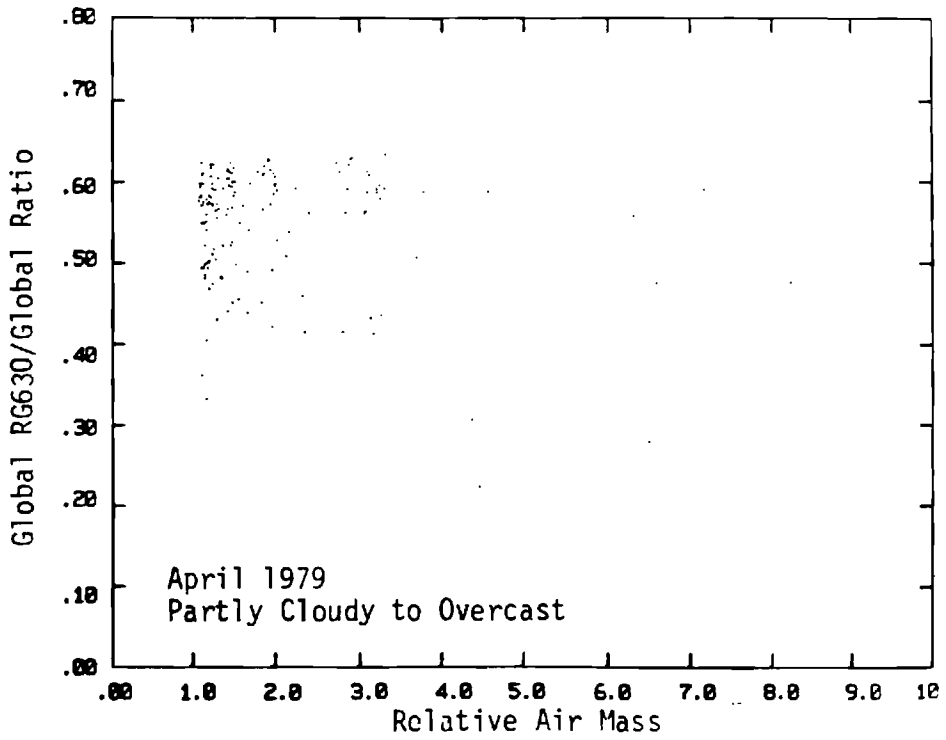


Figure 35. As in Figure 34 for Partly Cloudy-to-Overcast Skies in April 1979.

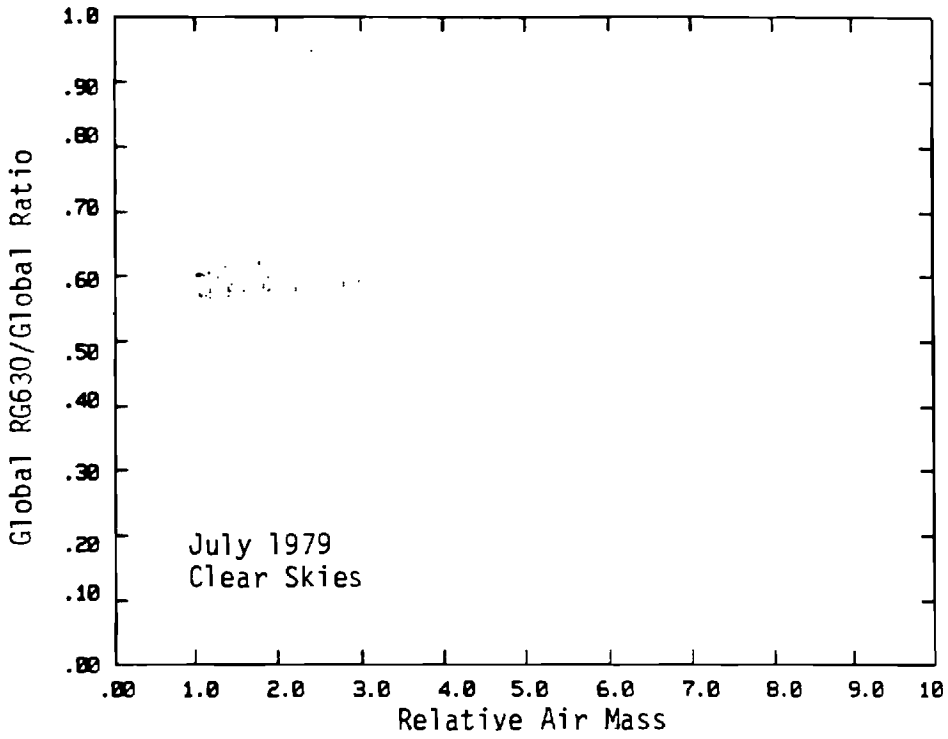


Figure 36. As in Figure 34 for Clear Skies in July 1979.

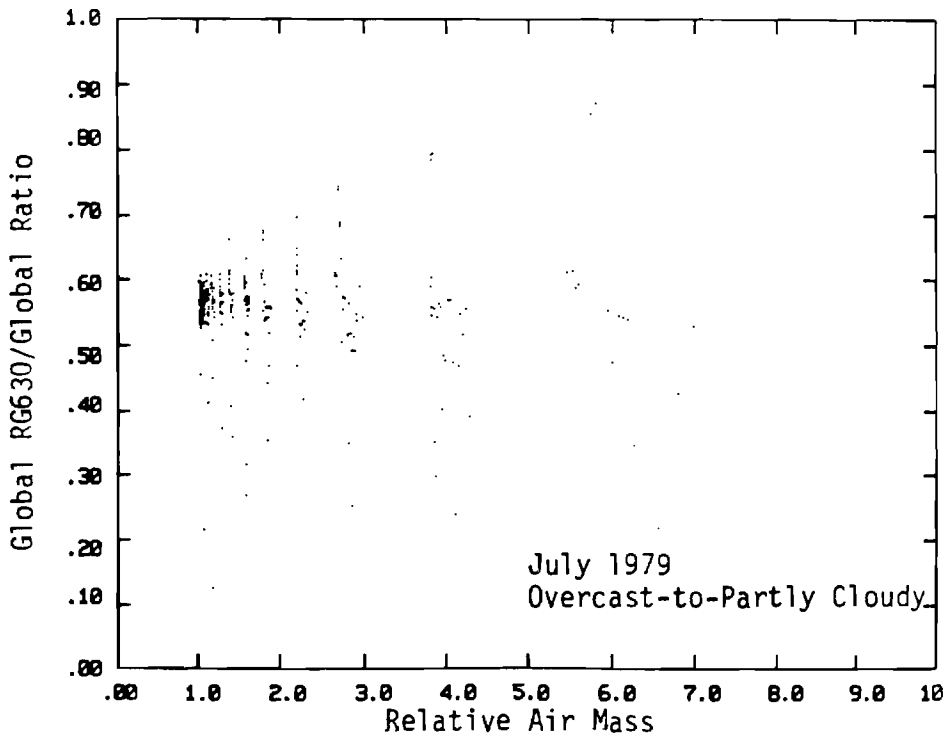


Figure 37. As in Figure 34 for Overcast-to-Partly Cloudy Skies in July 1979

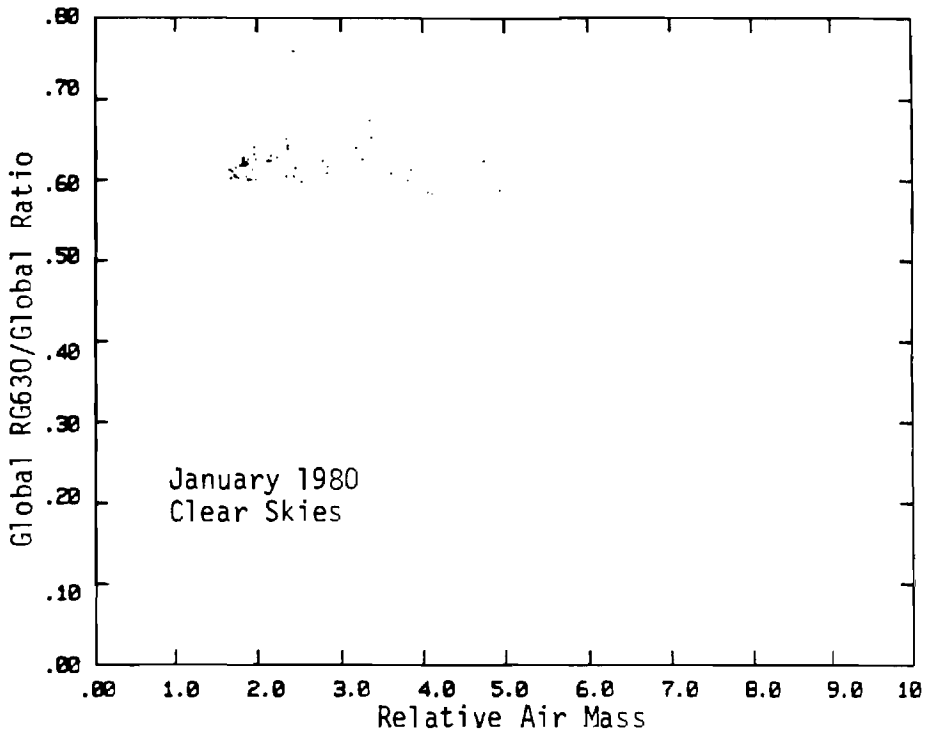


Figure 38. As in Figure 34 for Overcast-to-Partly Cloudy Skies in January 1980

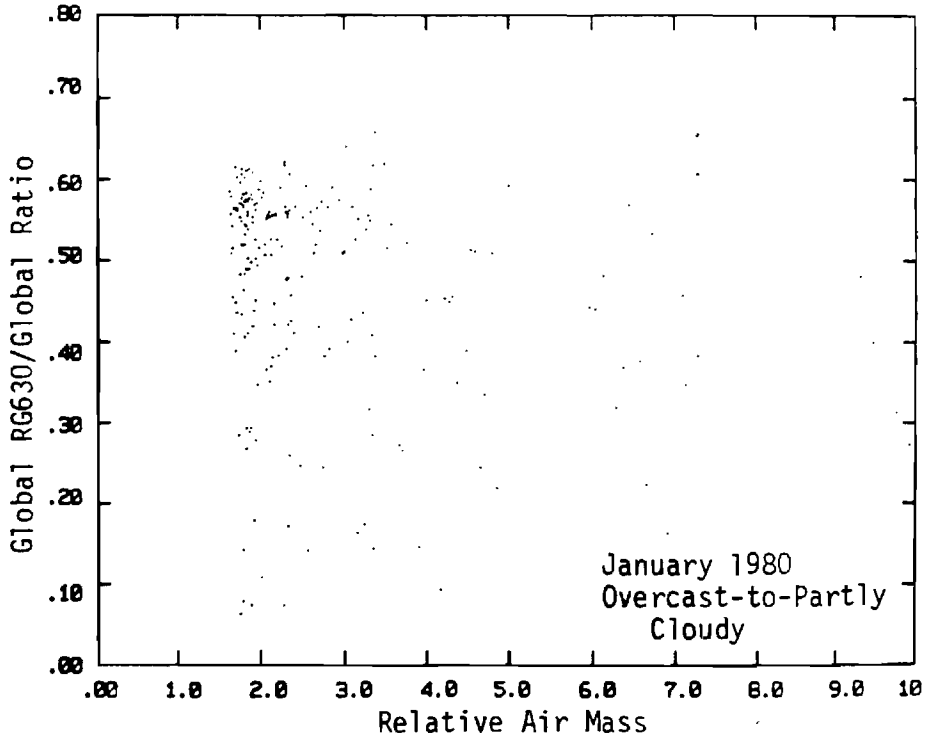


Figure 39. As in Figure 34 for Overcast-to-Partly Cloudy Skies in January 1980.

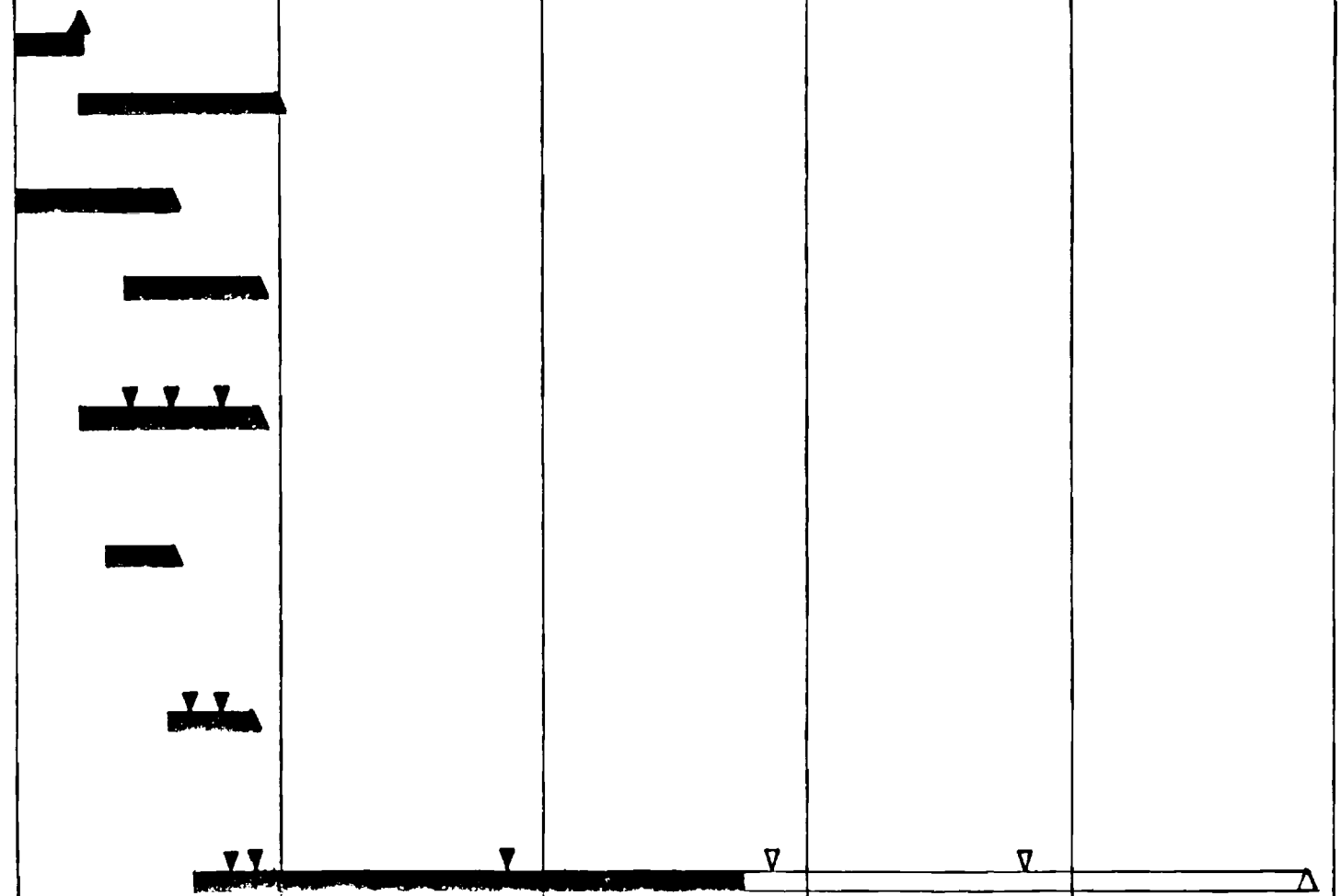
MILESTONES AND BUDGET

Current expenditures, through June 1980, total approximately $162,000, about $12,000 over linear projection project expenditure. This is due to equipment purchase ($14,000) during the first quarter.

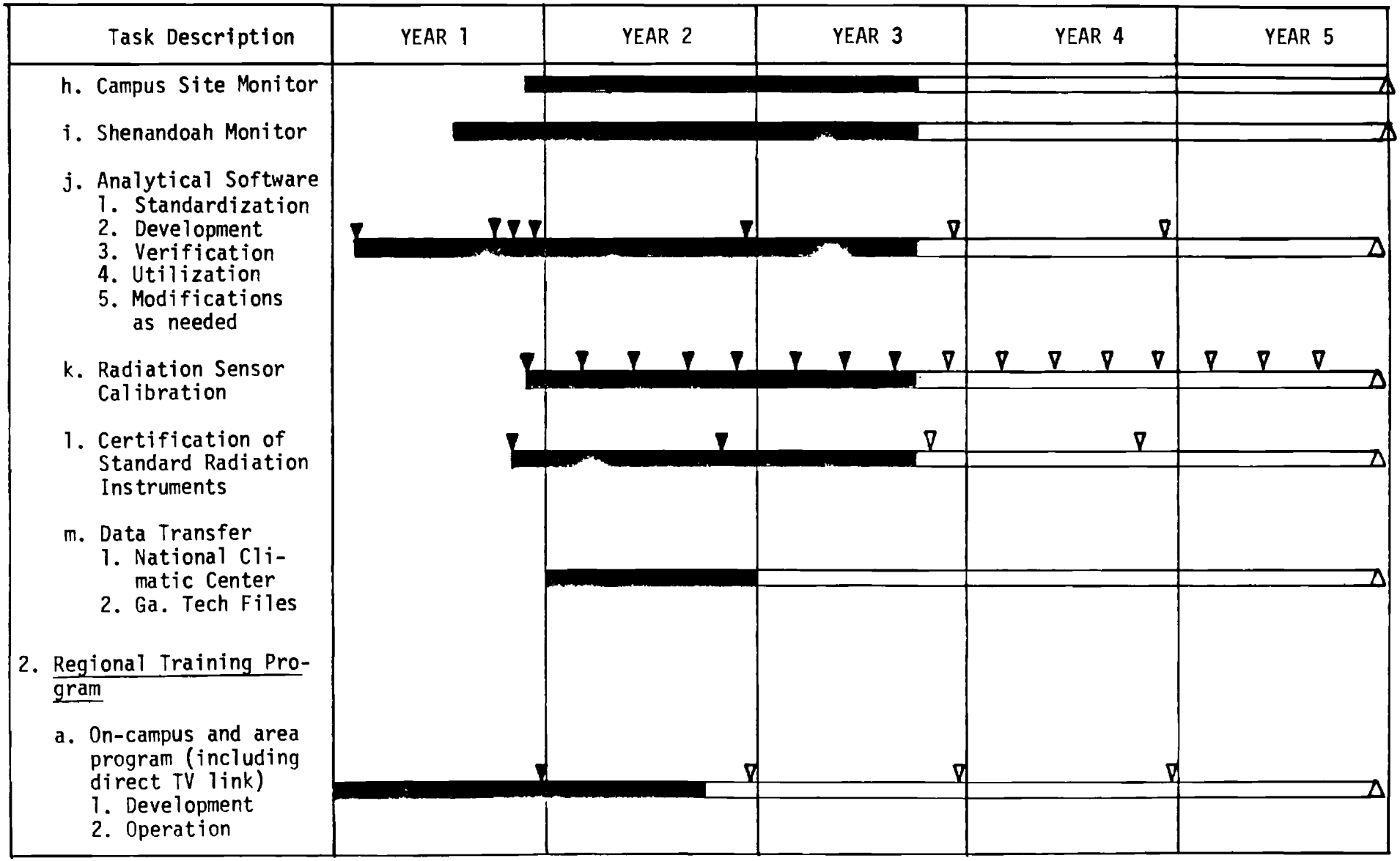
A detailed milestone and progress chart is attached.

Milestone Chart

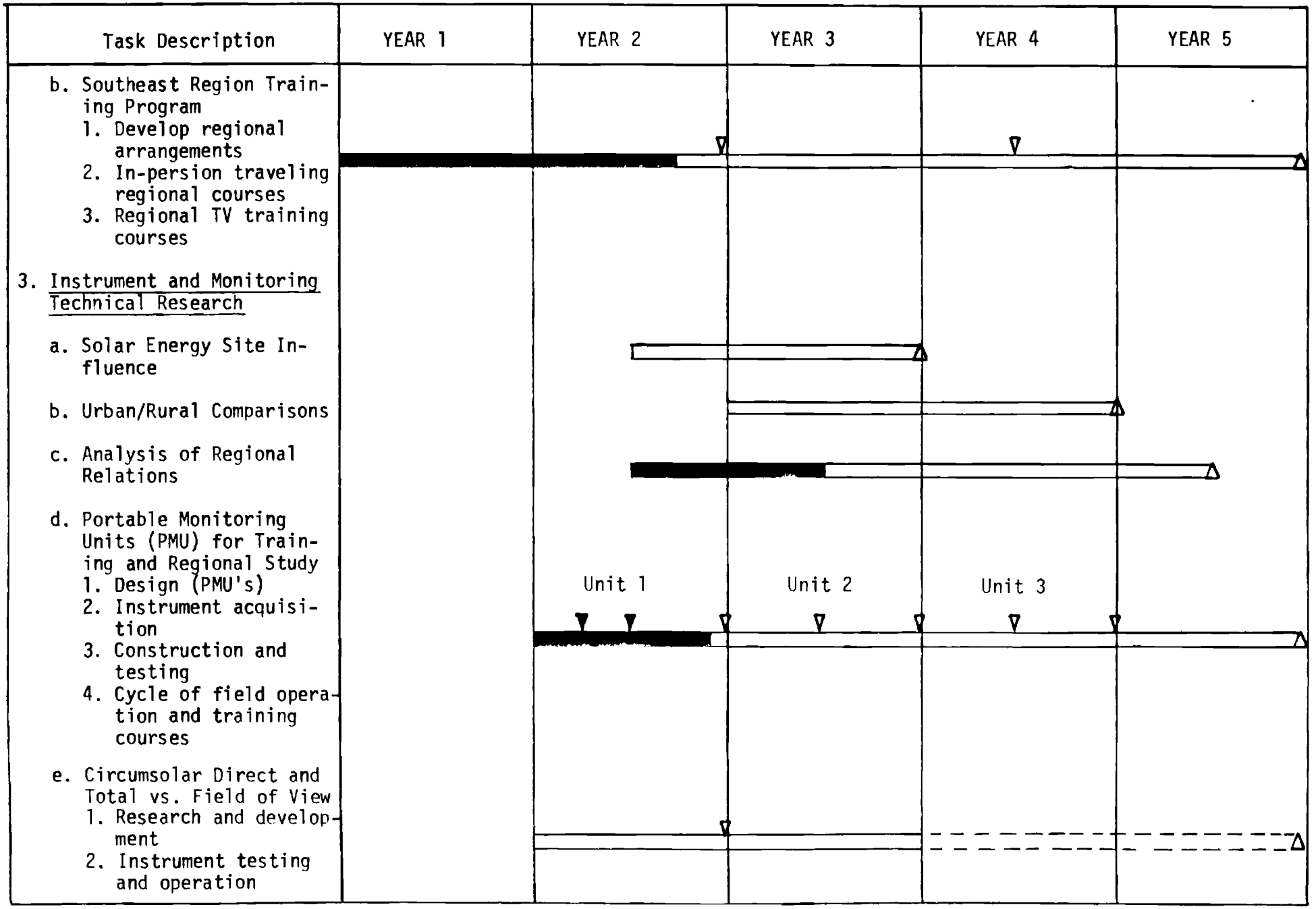
Task Description	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
1. Solar Radiation & Meteorological Monitoring					
a. 1. Instrument Network Design					
2. Modifications as needed					
b. Selection, order, and delivery of instru.					
c. Instrument check and certification					
d. Auxiliary Hardware 1. Design					
2. Mat. Acquisition					
3. Fabrication					
4. Installation					
e. Campus Site Mod. and preparation					
f. Relocation of Existing Instruments 1. Installation					
2. Calibration					
3. Temp. Data Acquisition					
g. Instrumentation 1. Installation					
2. Electronic and Meteorol. Calibration					



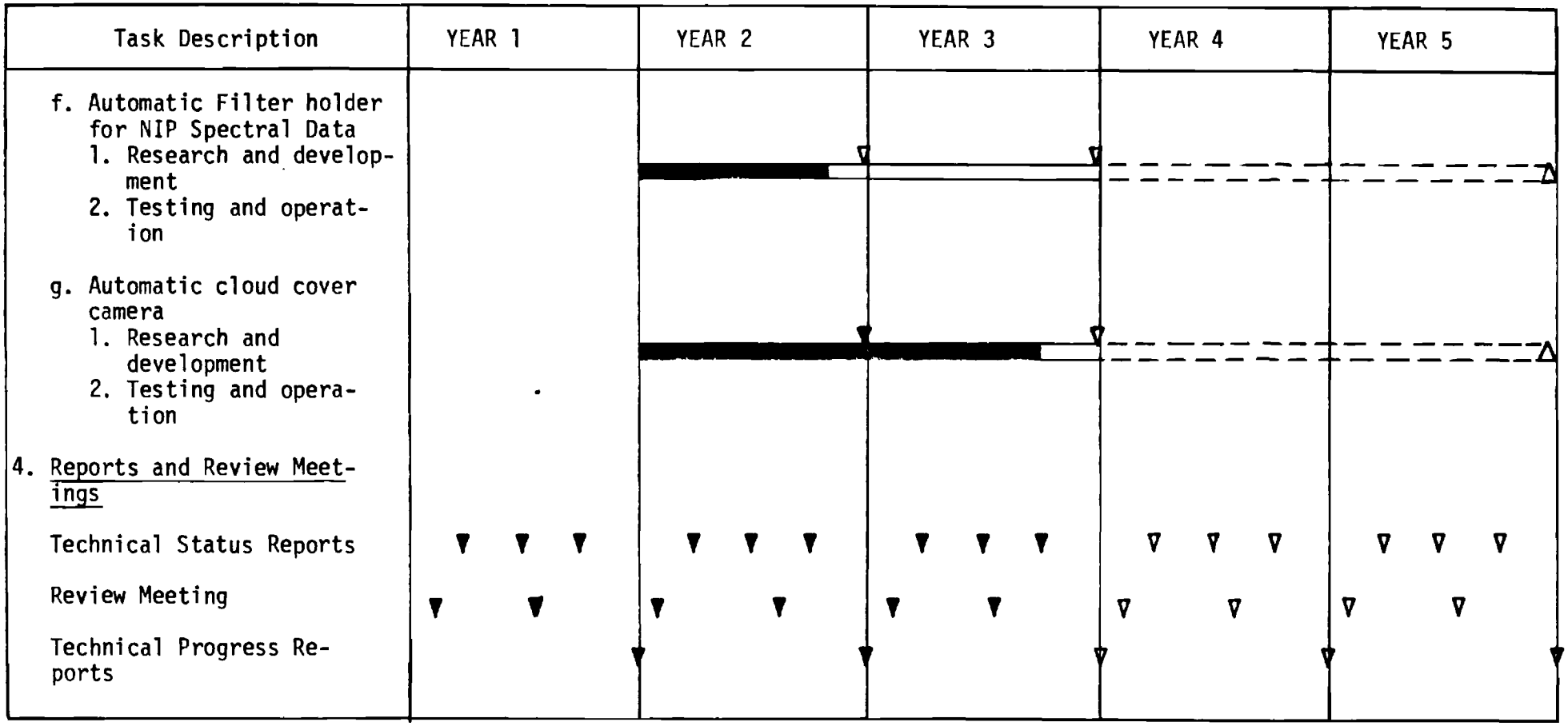
Milestone Chart (Cont'd.)



Milestone Chart (Cont'd)



Milestone Chart (cont'd)



ANNUAL PROGRESS REPORT

PROJECT NO. E–16–C02 ORO/20153–80/1

PROGRAM FOR SOLAR ENERGY METEOROLOGICAL RESEARCH AND TRAINING SITE (REGION 3)

By

C.G. Justus, John B. Kline, J.I. Craig,
J.M. Schlag and Lonzy Lewis

Prepared for

THE UNITED STATES DEPARTMENT OF ENERGY
DIVISION OF DISTRIBUTED SOLAR TECHNOLOGY

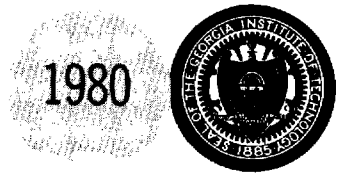
Under

GRANT DE–FG05–77ET20153

Report Period: 1 October 1979 – 30 September 1980

DECEMBER 1980

GEORGIA INSTITUTE OF TECHNOLOGY
SCHOOL OF GEOPHYSICAL SCIENCES
ATLANTA, GEORGIA 30332



ORO/20153-80/1

PROGRAM
FOR
SOLAR ENERGY METEOROLOGICAL RESEARCH
AND
TRAINING SITE (REGION 3)

Annual Progress Report

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Georgia Tech Project E-16-C02

ABSTRACT

Data and analyses of one year (April 1979 - March 1980) of solar radiation data from the Atlanta Georgia Tech site are presented. Specific research results deal with: 1) intercomparison of the urban Georgia Tech site with data from the rural site at Shenandoah Georgia (separation 60km, 40 miles) for global (all sky) radiation, 2) model comparisons of the Watt model and Bird model for direct beam radiation against measured data, 3) a study of relative measurement errors for the Eppley PSP, Spectrolab SR75, Lambda LiCor, and Eppley 8-48, 4) global and direct radiation regressions versus percent available sunshine, 5) comparison of Campbell-Stokes and Foster Sunshine Switch measurements with pyrheliometer derived percent available sunshine, 6) comparison of isotropic (Liu and Jordan) versus anisotropic (Klutcher) sky radiation for deriving solar radiation on a tilted surface versus measured data, 7) examination of various methods for plotting diffuse radiation versus other parameters, 8) display of observed variation of ultraviolet (0.30-0.39μ) radiation versus global radiation as a function of relative air mass and cloud cover, 9) annual time series and regression plotting techniques, and 10) examples of probability distribution and joint probability distribution statistics for daily averages, totals, maximum or minimums. Hourly, daily, and monthly values are tabulated in an Appendix for direct, direct (RG630), global, global (RG630), diffuse, latitude tilted global, ultraviolet radiation, and available sunshine, for the period April 1979 - March 1980. Monthly averages of other meteorological and radiation parameters are also tabulated for this period.

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1. BACKGROUND

Eight regional university Solar Energy Meteorological Research and Training Site (SEMRATS) Program sites have been established around the United States. The Georgia Institute of Technology is the SEMRATS center for the Southeastern Region, including Florida, Georgia, Alabama, Mississippi, Tennessee, South Carolina, North Carolina, Virginia, Kentucky, West Virginia, Maryland, the District of Columbia, and Delaware. Permanent monitoring sites on the Georgia Tech campus and at Shenandoah, about 60km (40 miles) southwest of the campus site, continuously monitor and record global, direct, diffuse, global tilted, UV, IR, and other spectral radiation parameters. A careful program of instrument and electronic calibration and quality control will insure the accuracy of these recorded data. Programs of training for students at Georgia Tech and for professionals in the field are also carried out in the area of solar energy resource assessment.

Significant earlier progress has been reported in the 1977-78 annual report (ORO/5604-78/4) which gives a complete site and instrumentation description for the Georgia Tech and Shenandoah sites, as well as a description of the data processing and quality control procedures used. See also Appendix A and Section 2, following, for additional site description.

An atlas of the solar radiation resource for the southeast region has been prepared as the 1978-79 annual report (ORO/5604-80/1).

2. DESCRIPTION OF DATA

The measurements being taken and instruments used are summarized in Table 1. Data are logged by an Acurex data logger and Cypher tape deck, then processed on a Data General Eclipse S-130 computer system. A combination of automatic and manual editing is used in the quality control of the data, with about 3-5 person-days per month being required in the manual editing process. At the Shenandoah site a similar but less complete set of instrumentation is used. Data at that site are logged on a EG&G data logger and tape cassette recorder, and are processed on the Georgia Tech CYBER computer system, with a similar quality control procedure.

Hourly averages from both the Georgia Tech campus site and the Shenandoah site will be made available in Research Cooperator Format through the National Climatic Center in Asheville. It is planned that the one-minute data from the Georgia Tech site for July 1980 through June 1981 will be archived at SERI. Hourly values and daily and monthly totals for selected radiation parameters are also given in Appendix A for one full year of data (April 1979 through March 1980) for the Georgia Tech campus site.

Specific research results reported here deal with: 1) intercomparison of the urban Georgia Tech site data from the rural Shenandoah site for global (all sky) radiation, 2) model comparisons of the Watt (1978) and the Bird (1980) direct beam models against observed direct normal, 3) relative measurement error assessments for global, direct, and tilted surface radiation of the Eppley PSP against Spectrolab SR75, the Lambda LiCor, and the Eppley 8-48, 4) global and direct regressions against percent available sunshine, 5) comparisons of Campbell-Stokes and Foster Sunshine Switch measurements vs pyrheliometer derived percent available sunshine, 6) isotropic (Liu and Jordan, 1963) model radiation on a tilt vs observed and anisotropic (Klutcher, 1979) model radiation on a tilt vs

TABLE 1

ATLANTA, GEORGIA TECH SITE
(C.E. BUILDING ROOF ON GA. TECH CAMPUS)
RESEARCH COOPERATOR DATA DESCRIPTION

Latitude = 33° 46' 37" N
Longitude = 84° 23' 54" W
Time Zone = Eastern (5)

Element Code	Elevation MSL, m	Elevation AGL, m	Orientation Azimuth	Orientation Tilt	Spectral Band μ Lower	Spectral Band μ Upper	Description	Units
1000	326.8	34.8	0	0	0.29	2.80	Global Horizontal, Eppley PSP	kJ/m^2
1001	326.8	34.8	0	0	0.29	2.80	Global Horizontal, Spectrolab SR 75	kJ/m^2
1002(1)	326.8	34.8	0	0	0.38	1.20	Global Horizontal, LiCor Lambda	kJ/m^2
1003(1)	326.8	34.8	0	0	0.38	1.20	Global Horizontal, Dodge Products Solar Cell	kJ/m^2
1460	326.8	34.8	180	34	0.29	2.80	Global Latitude Tilted, PSP w/artificial horizon	kJ/m^2
1461(2)	326.8	34.8	180	34	0.29	2.80	Global Latitude Tilted, Lambda w/artificial horizon	kJ/m^2
2010	326.8	34.8	-	-	0.29	2.80	Direct Normal, Eppley NIP	kJ/m^2
2011(2)	326.8	34.8	-	-	0.29	2.80	Direct Normal, Eppley NIP (redundant)	kJ/m^2
2012(2)	326.8	34.8	-	-	0.38	1.20	Direct Normal, LiCor Lambda w/colimator	kJ/m^2
3000	326.8	34.8	0	0	0.29	2.80	Diffuse, PSP and tracking disk	kJ/m^2
3001(3)	326.8	34.8	0	0	0.29	2.80	Diffuse, PSP and tracking disk	kJ/m^2
5000	326.8	34.8	0	0	0.30	0.39	UV, Eppley TUVR	kJ/m^2
6000(4)	326.8	34.8	0	0	2.80	60.0	IR from Total Incoming (Funk) minus Global (PSP)	kJ/m^2
6001(4)	326.8	34.8	0	0	3.5	50.0	IR from Eppley PIR	kJ/m^2
7000	326.8	34.8	0	0	0.63	2.80	Global Spectral, PSP and RG2 filter	kJ/m^2
7010(5)	326.8	34.8	0	0	0.63	2.80	Direct Normal Spectral, NIP and RG2 filter	kJ/m^2
9000(5)	326.8	34.8	-	-	-	-	% Possible Sunshine, Campbell Stokes	%
9001(5)	326.8	34.8	-	-	-	-	% Possible Sunshine, NIP w/200 W/m^2 threshold	%
9150(6)	326.8	34.8	-	-	-	-	Rainfall	mm
9200	332.9	40.9	-	-	-	-	Wind Direction, lower level	deg
9201	343.3	51.3	-	-	-	-	Wind Direction, upper level	deg
9210	332.9	40.9	-	-	-	-	Wind Speed, lower level	m/s
9211	343.3	51.3	-	-	-	-	Wind Speed, upper level	m/s
9300	329.8	37.8	-	-	-	-	Dry Bulb Temperature, lower level	°C
9301	343.0	51.0	-	-	-	-	Dry Bulb Temperature, upper level	°C
9320	329.8	37.8	-	-	-	-	Dew Point Temperature, lower level	°C
9321	343.0	51.0	-	-	-	-	Dew Point Temperature, upper level	°C
9400	326.8	34.8	-	-	-	-	Station Pressure	kPa

(1) Not available after 10/26/79; (2) Available after 2/1/80; (3) Available after 1/10/80; (4) Available after 4/14/80;
(5) Available only in hourly RCF; (6) Minute rainfall is cumulative from beginning of hour.

observed, 7) various methods for displaying ratios of diffuse radiation to other parameters, 8) observed variations of UV vs relative air mass and amount of cloud cover, 9) annual regressions and time series plotting methods for daily total radiation, and 10) some examples of probability distribution and joint statistics of daily radiation and meteorological data.

3. RESULTS AND DISCUSSION

Ga. Tech/Shenandoah Comparisons

Solar radiation data from the Atlanta Georgia Tech site and the Shenandoah site are being compared. Table 2 shows a comparison of global horizontal data from the period April 1979 through September 1980 from the two sites. The rms difference of the monthly averages is 3.5%, with Shenandoah (the rural site) showing the higher values. Further studies will include comparison of the monthly average direct beam radiation, diffuse radiation, and comparisons on selected clear days to isolate turbidity effects on direct and global radiation components.

Model Comparisons against Measured Data

The two solar radiation models tested against the measured data thus far are those of Watt (1978) and of Bird and Hulstrom (1980), referred to here as the Bird Model. Figures 1-4 illustrate the ability of the Watt model to reproduce some features of observed direct, diffuse, and global radiation on relatively clear and on partly cloudy days, using the simple fractional cloud cover modifier to account for cloud effects. In a comparison of one year of data (April 1979 - March 1980), the Watt model did slightly better reproducing the observed direct than did the Bird model (standard error of least squares fit = 277KJ/m^2 for the Watt model vs 336KJ/m^2 for the Bird model).

The rms errors in monthly mean direct values were about 16% for the Bird model and 11% for the Watt, using climatological values of precipitable water and turbidity. Errors in the estimated annual mean were about 4% for the Watt model and 8% for the Bird model (See Table 3). Further studies are underway using observed turbidity from Volz photometer readings and precipitable water from the nearest upper air sounding station (Athens, GA). The Watt and Bird models currently have about 20 times the error achievable by measurement, since comparison of redundant phrheliometer readings (on separate trackers) showed an

TABLE 2

Monthly Avg. Daily Total Global Horizontal Radiation, MJ/m^2

	Atlanta, Ga. Tech Campus Site	Shenandoah Industrial Park Site	% Difference
1979			
APR	18.0	18.2	1.2
MAY	18.3	–	–
JUN	21.2	21.7	2.1
JUL	17.4	17.9	3.1
AUG	19.1	–	–
SEP	12.3	12.9	5.5
OCT	14.7	15.3	4.0
NOV	9.9	10.4	4.6
DEC	8.2	8.3	1.2
1980			
JAN	6.1	6.3	3.5
FEB	12.3	12.6	2.3
MAR	13.1	13.6	3.0
APR	18.8	18.9	0.2
MAY	18.8	19.9	6.2
JUN	*	21.4	–
JUL	*	23.7	–
AUG	*	21.3	–
SEP	*	16.9	–

rms 3.5%

*not yet processed

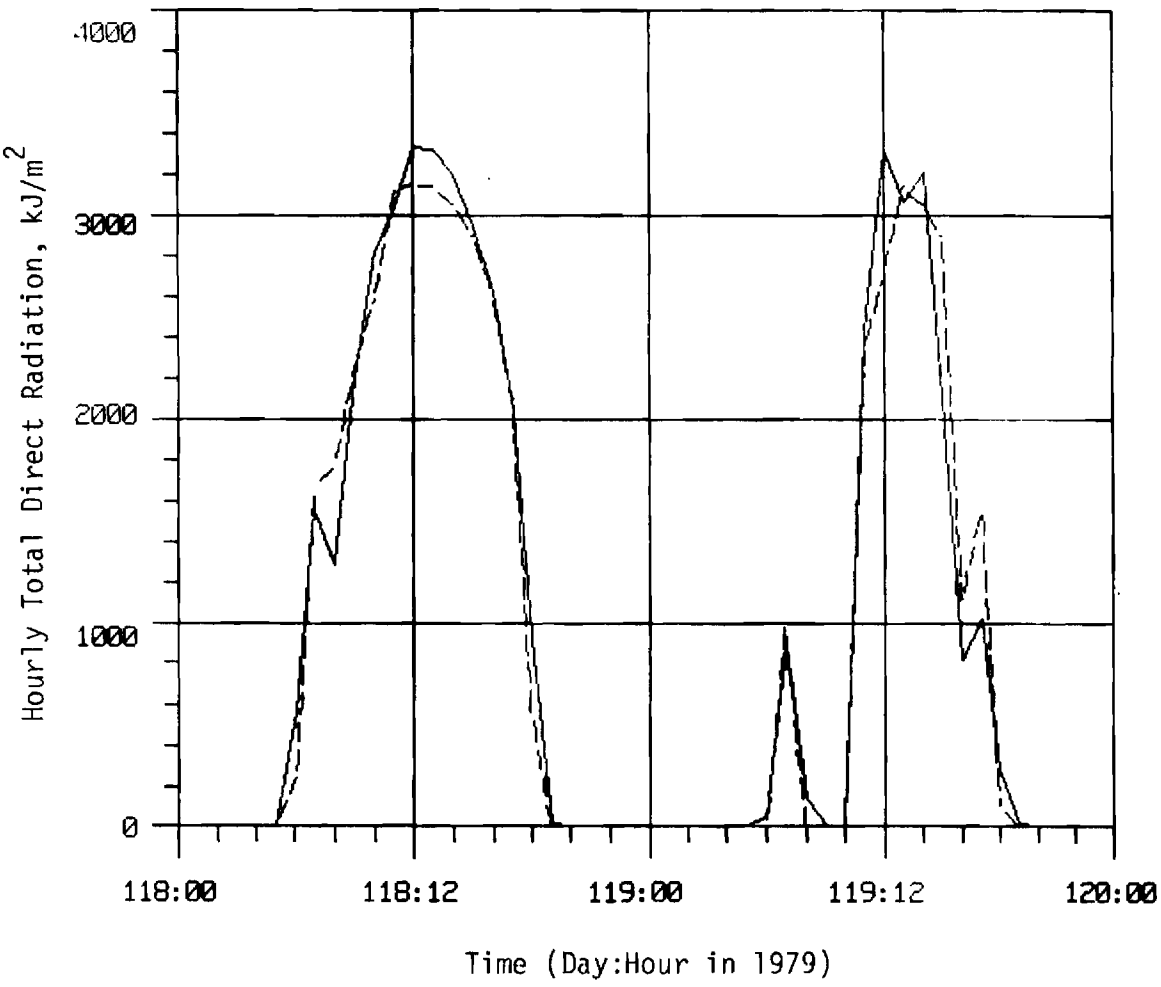

Figure 1. Measured (solid line) and Watt Model (dashed line) Values for Direct Normal Radiation on a Clear Day (118 = April 28) and Partly Cloudy Day (119 = April 29) in 1979.

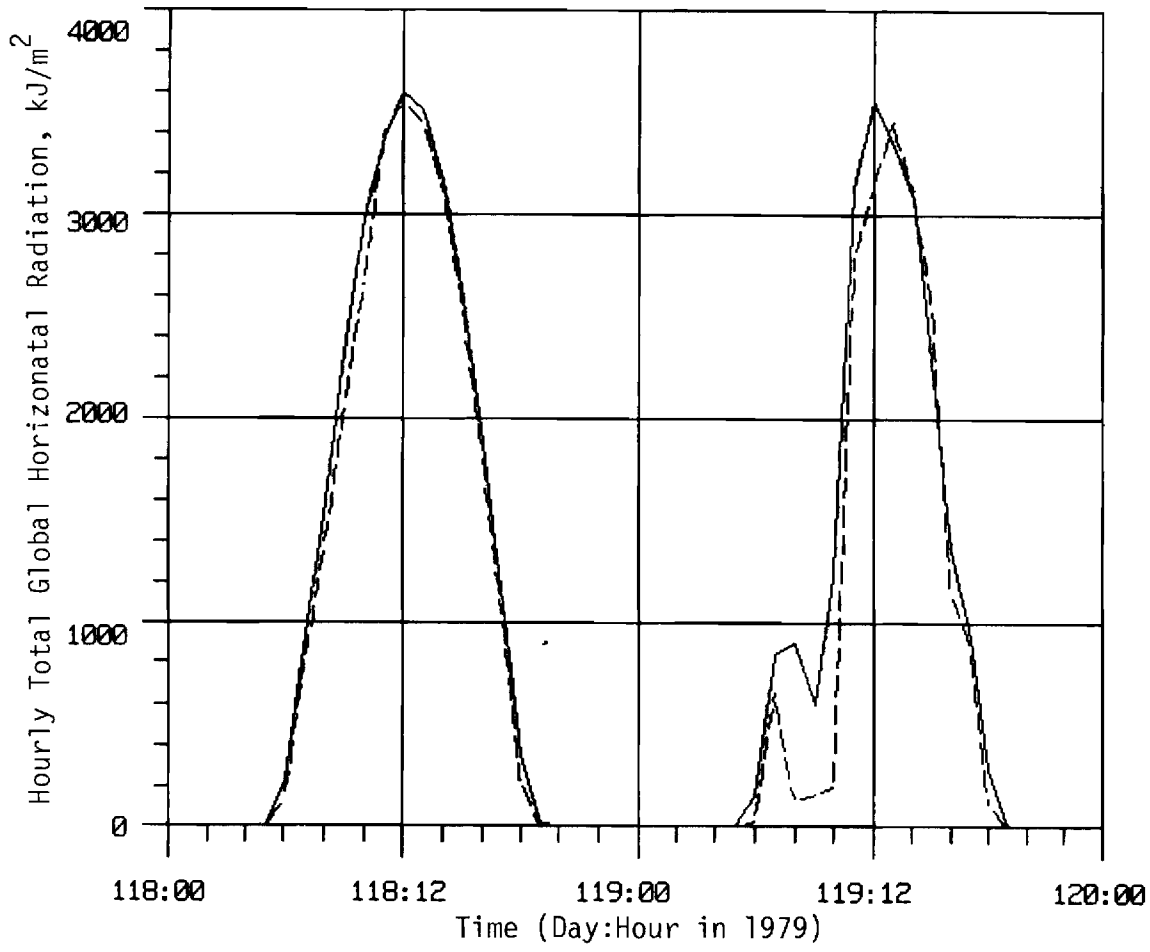

Figure 2. As in Figure 1 for Global Horizontal Radiation

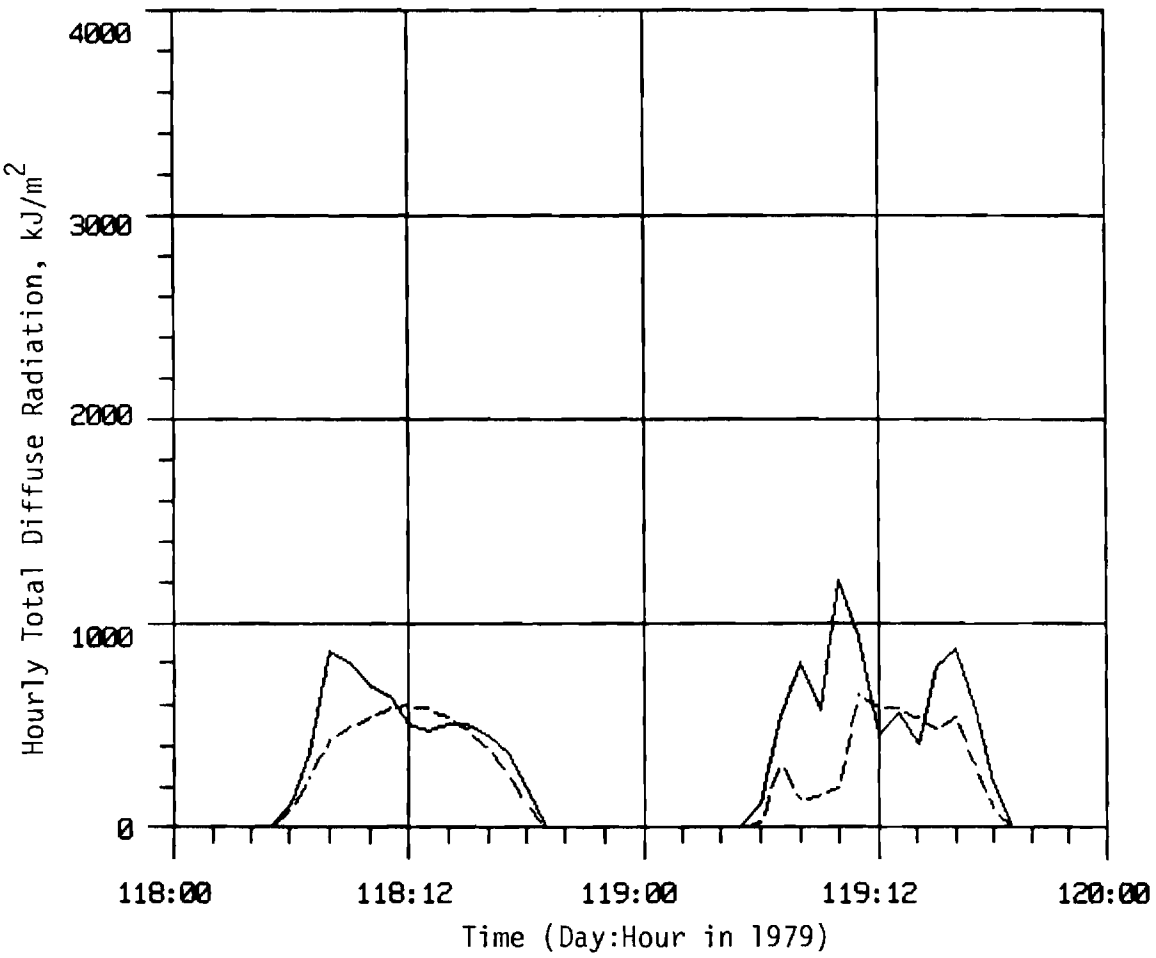

Figure 3. As in Figure 1 for Horizontal Diffuse Radiation.

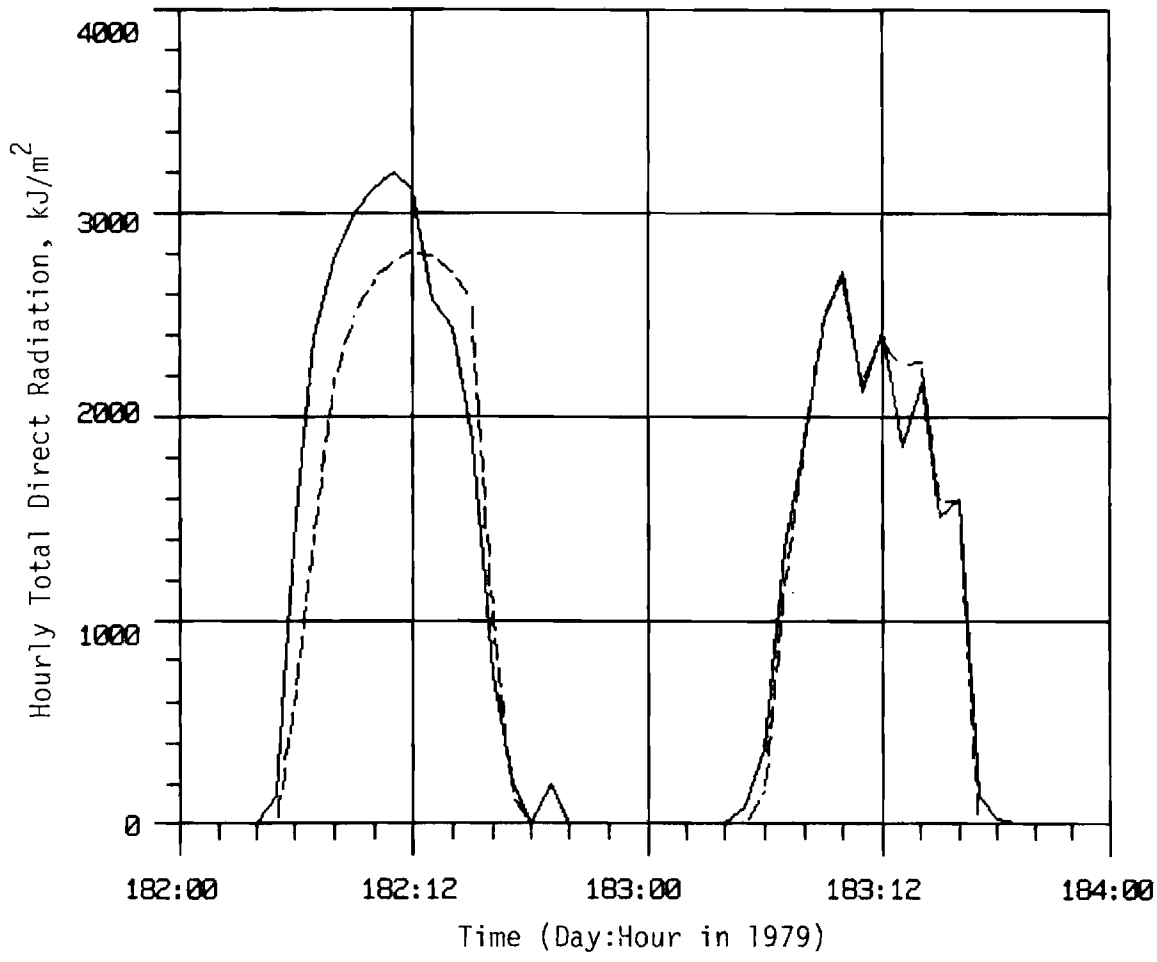

Figure 4. Measured (solid line) and Watt Model (dashed line) Values for Direct Normal Radiation on a Mostly Clear Day (182 = July 1) and a Partly Cloudy Day (183 = July 2) in 1979.

TABLE 3

Comparison of Monthly Mean Direct Radiation Model and Observed Data

	Observed Direct MJ/m^2-day	Bird Model Direct MJ/m^2-day	Deviation from Observed	Watt Model Direct MJ/m^2-day	Deviation from Observed
1979					
APR	16.1	18.5	+2.4	17.0	+0.9
MAY	12.7	15.1	+2.4	13.1	+0.4
JUN	14.8	17.9	+3.1	15.1	+0.3
JUL	10.6	12.8	+2.2	10.3	-0.3
AUG	13.5	17.8	+4.3	14.6	+1.1
SEP	8.1	10.3	+2.2	8.8	+0.7
OCT	20.4	18.1	-2.3	16.1	-4.3
NOV	15.7	15.0	-0.7	14.0	-1.7
DEC	13.8	13.2	-0.6	12.4	-1.4
1980					
JAN	7.4	7.0	-0.4	6.5	-0.9
FEB	16.2	16.0	-0.2	15.2	-1.0
MAR	13.2	13.7	+0.5	12.8	-0.4
	13.5	14.6 (+8%)	2.2 rms (16%)	13.0 (-4%)	1.5 rms (11%)

rms of 15.4KJ/m^2 or about 0.6% for the same one year period.

Site Horizon Description

The horizon as viewed from the Civil Engineering Building roof top location of the Atlanta, Georgia Tech site is shown in Figure 5. The largest obstruction is the Coca Cola headquarters building 9^o to 12^o east of south, with elevation blockage from $8\frac{1}{2}^o$ to 9^o. Figure 6 shows a schematic view of the horizon obstruction with azimuths and elevations indicated and solar tracks at equinoxes and solstices delineated on the same figure. Most of the data reported here were taken with conditions as shown in Figures 5 and 6. During the early months of 1980, construction of the new Southern Bell Telephone Company headquarters building began to intrude on the horizon at an azimuth of about 105^o. Although it later reaches an elevation of about 10^o, the obstruction introduced by this building was no more than about 5^o up through March 1980.

Instrument Measurement Accuracy

Redundant instruments and research instruments at the Atlanta, Georgia Tech site allow the basic accuracy of various pyranometers and pyrheliometers to be evaluated.

Figure 7 gives results for February 1980 of a comparison between the Eppley PSP and the Spectrolab SR75 operated as a redundant global radiation sensor. The standard error of the regression is 17.7KJ/m^2, with a regression slope of 0.992. For the one year period April 1979 - March 1980, the rms standard error of regression was 16.9KJ/m^2 and the 12 monthly regression slopes averaged 0.999 with a standard deviation of 0.005. The Eppley PSP and Eppley 8-48 were also compared, as were the Eppley PSP and Lambda LiCor photo cell radiometer. For the PSP/8-48 comparison, the rms standard error of regression was 42.3KJ/m^2 and the average monthly regression slope was 0.983 ± 0.016 (std. dev.). For the PSP/LiCor comparison, the rms standard error of regression was 38.7KJ/m^2 and the average monthly regression slope was 0.982 ± 0.024 (std. dev.). These results show that

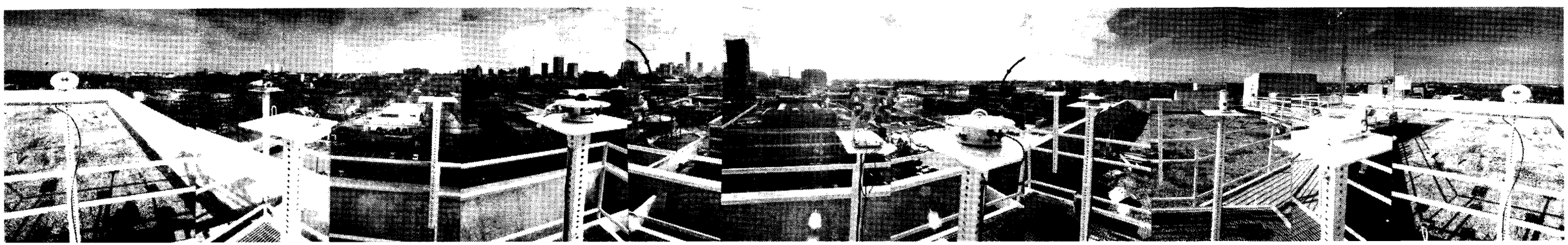

Figure 5. Panorama View from C. E. Roof Site

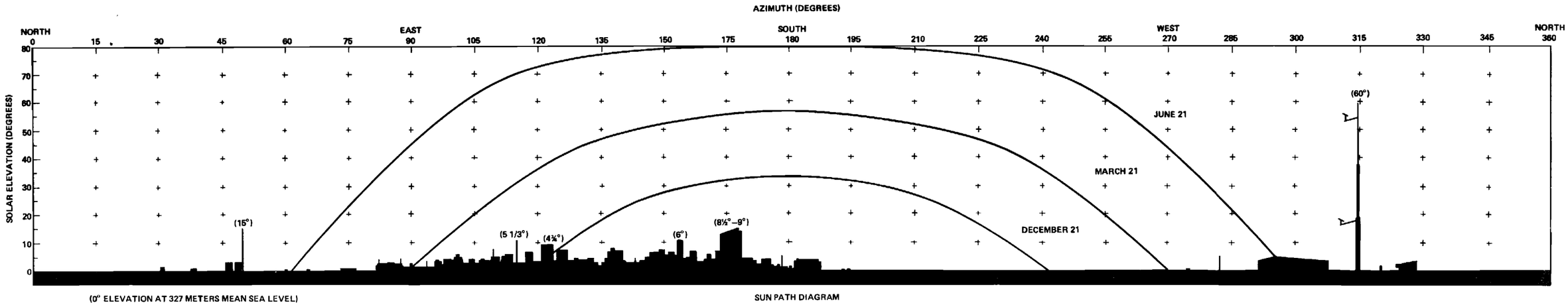

Figure 6. Schematic Panorama from C. E. Roof, Showing Solar Tracks and Solstices and Equinox (Vertical Scale Expanded)

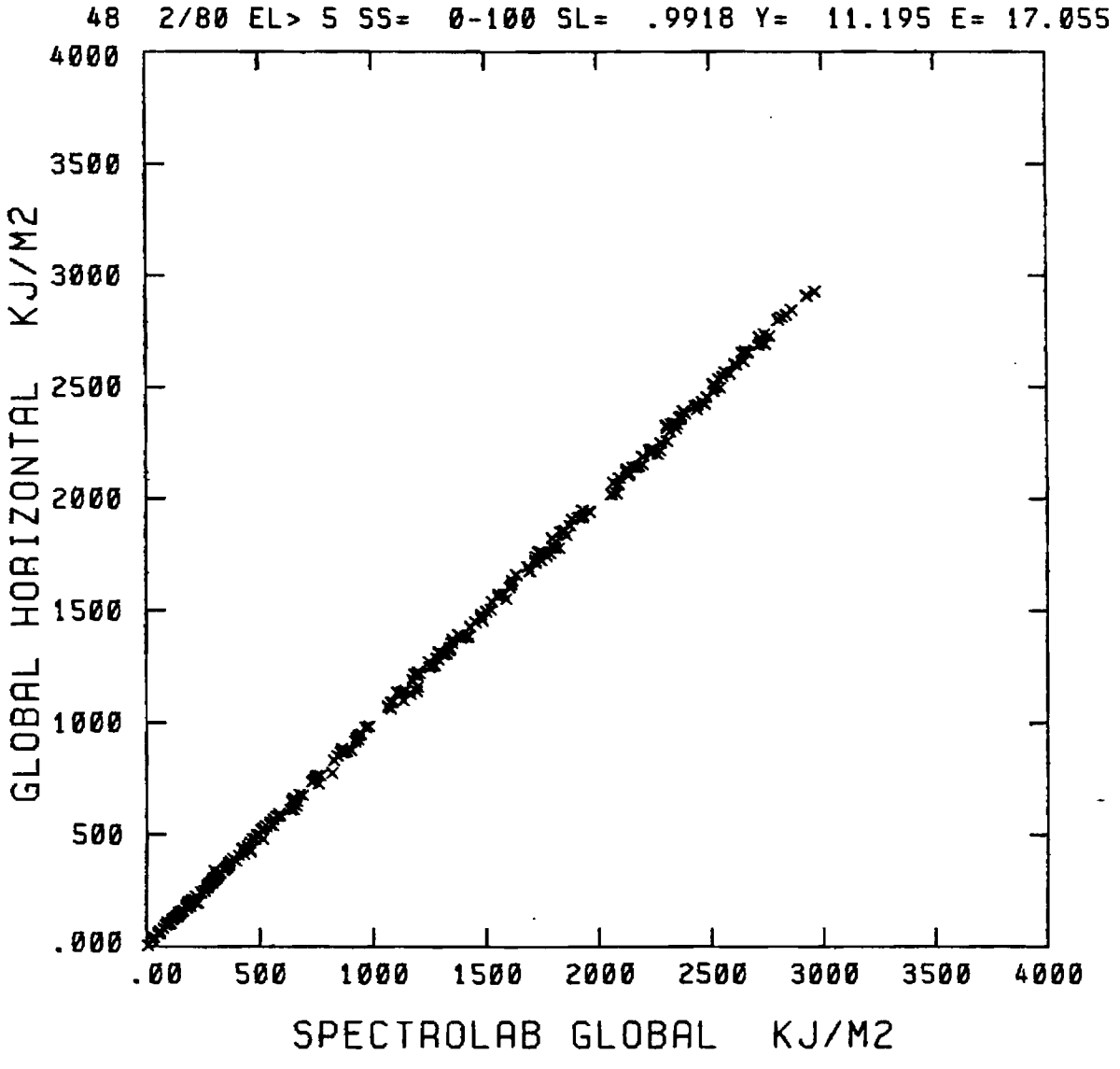

Figure 7. Hourly Global from Eppley PSP vs Global from Spectrolab SR75 for February 1980

the Lambda LiCor used as a global horizontal pyranometer has errors which are 2-5 times larger than the PSP (but at about 1/10th the cost of the PSP). The Lambda LiCor and Eppley 8-48 show comparable errors, despite the higher cost (by about a factor of 6) for the 8-48 compared to the LiCor.

Recent measurements with a Lambda LiCor on a latitude tilt indicate comparable errors. Two months data show rms regression error of 55KJ/m^2 compared with the tilted PSP. A collimated LiCor sensor to measure direct beam shows 45KJ/m^2 standard error of regression when compared with Eppley pyrheliometer measurements. Inherent accuracy of the pyrheliometer, mentioned earlier, is about 15KJ/m^2.

Regressions of Solar Radiation and Percent Sunshine

The basis for much of the SOLMET "Ersatz" data is a regression model for global radiation versus percent sunshine. Studies of hourly and daily regressions of this type are being done in order to understand better the limitations and accuracy of this technique.

Figure 8 gives a plot of the hourly ratio of global to horizontal extraterrestrial versus hourly percent sunshine. Note the "end effects" at 0 and at 100 percent sunshine, where there is more spread and an apparent shift in average value from the values approaching these end points. The zero point end effect is also evident in Figure 9 for the daily global/ETR ratio versus daily percent sunshine. However, the end effect at 100 percent sunshine is not so evident as for the hourly data.

Figure 10 shows that hourly direct/ETR versus percent sunshine has a similar end effect at 100 percent, but not 0. This relation also is non-linear between the end point limits. Figure 11, like Figure 9, shows less of an end effect for the daily data than for the hourly data.

Pyrheliometer vs. Campbell-Stokes vs. Foster Sunshine Recorders

Sunshine duration measurements at National Weather Service sites are made

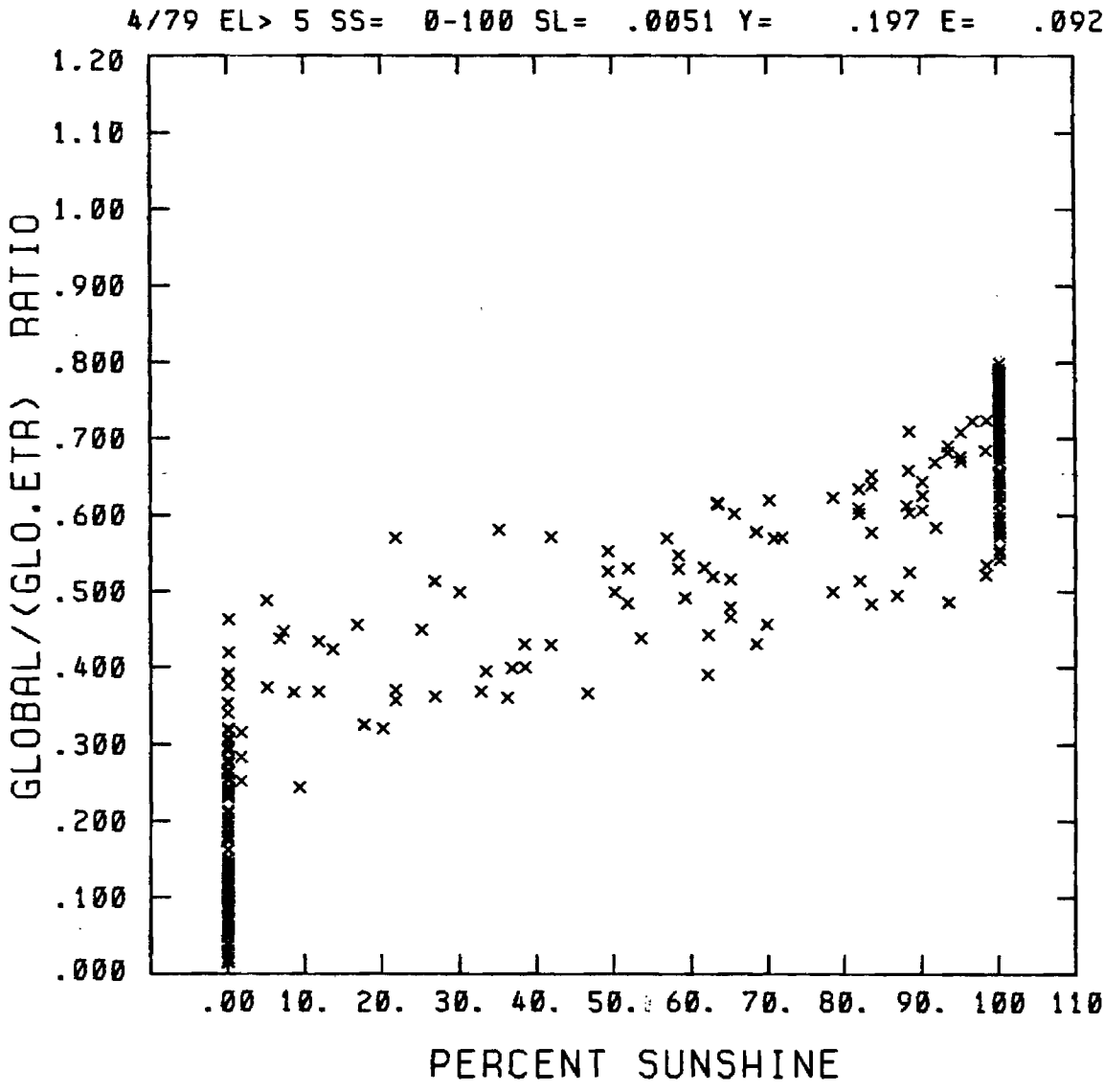

Figure 8. Hourly Global/(Extraterrestrial on Horizontal Surface) versus Percent Available Sunshine for April 1979

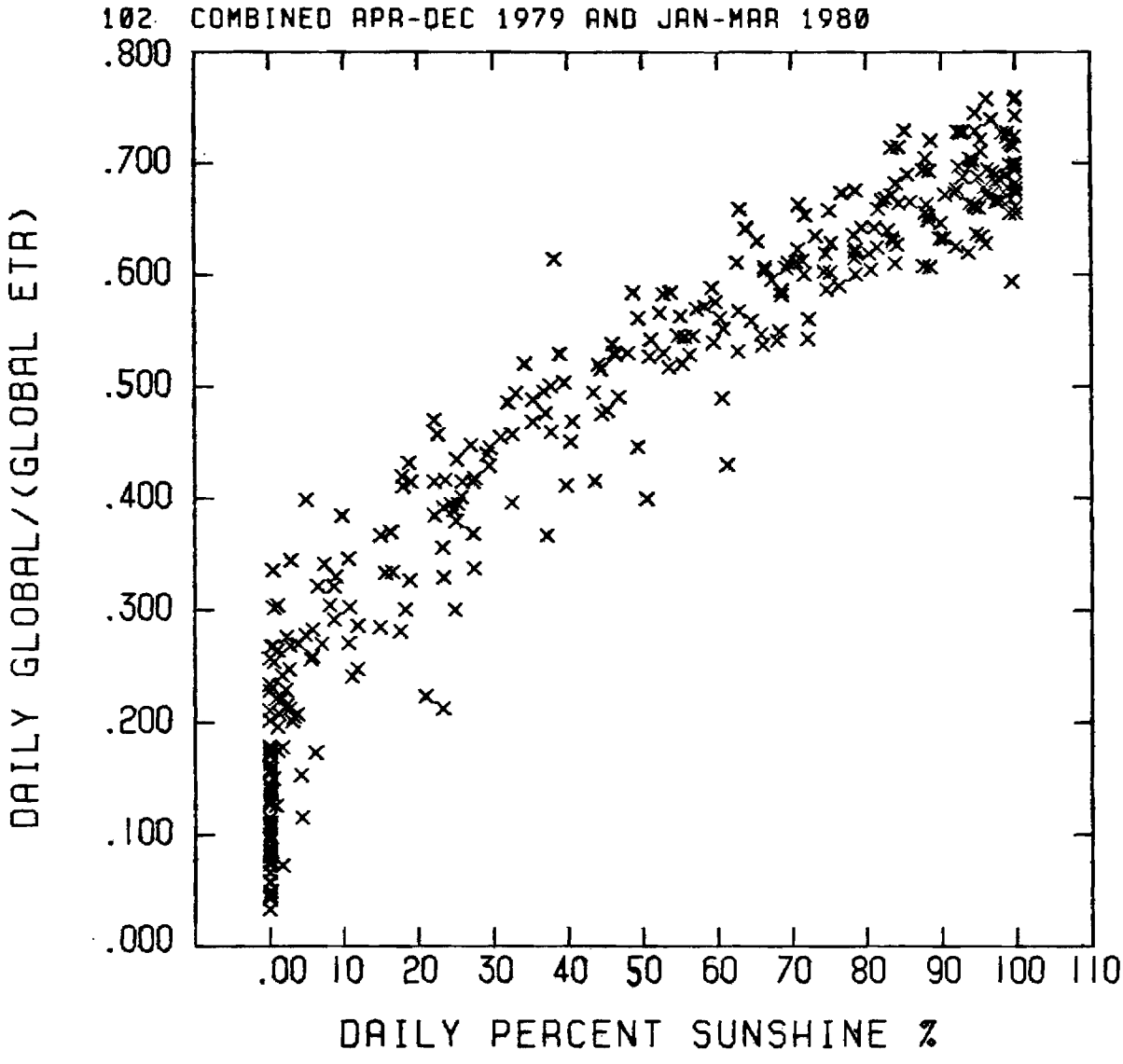

Figure 9. Daily Global/(Extraterrestrial on Horizontal Surface) versus Daily Percentage Available Sunshine for April 1979 - March 1980

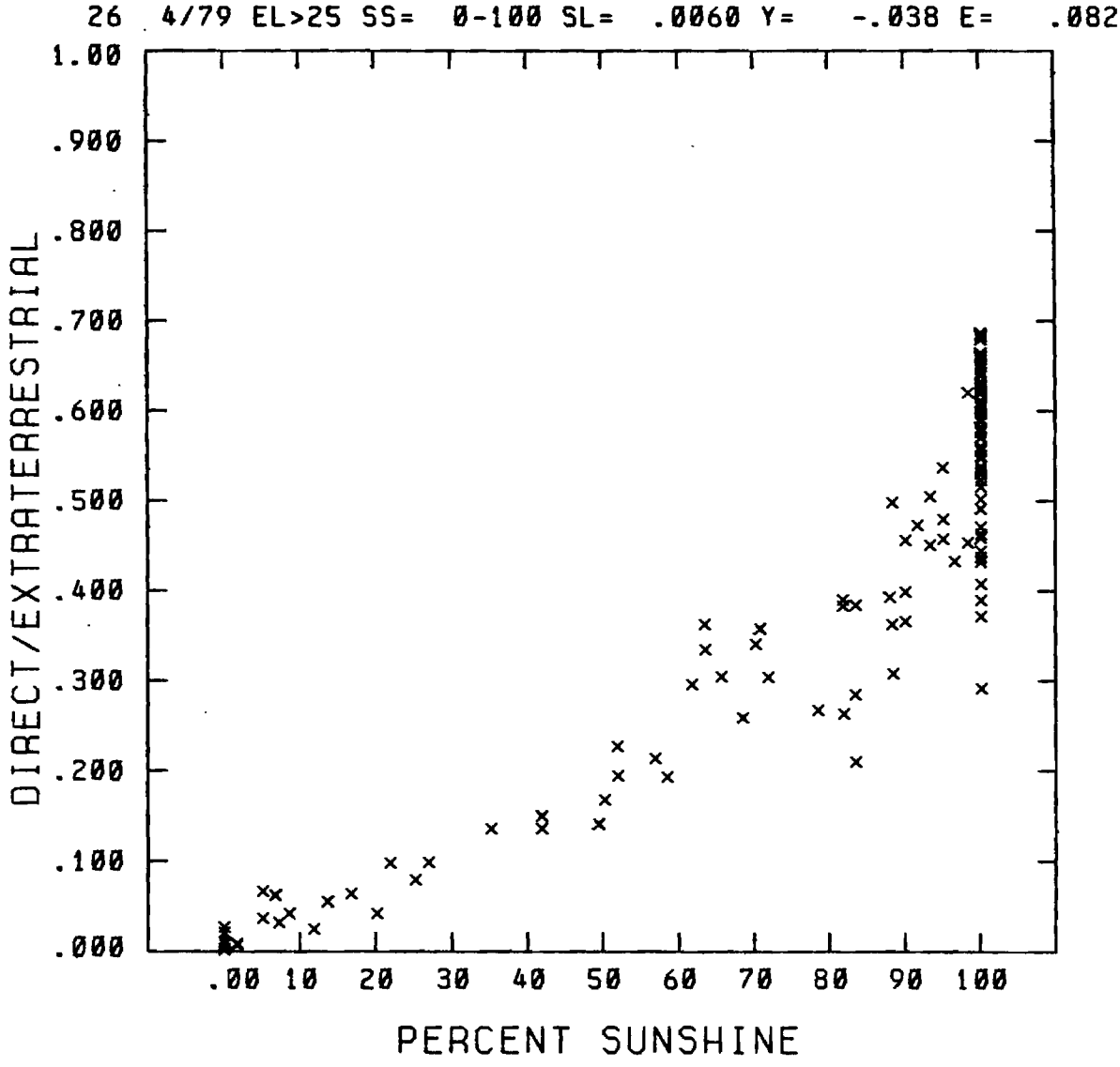

Figure 10. Hourly Direct/Extraterrestrial versus Percent Available Sunshine for April 1979

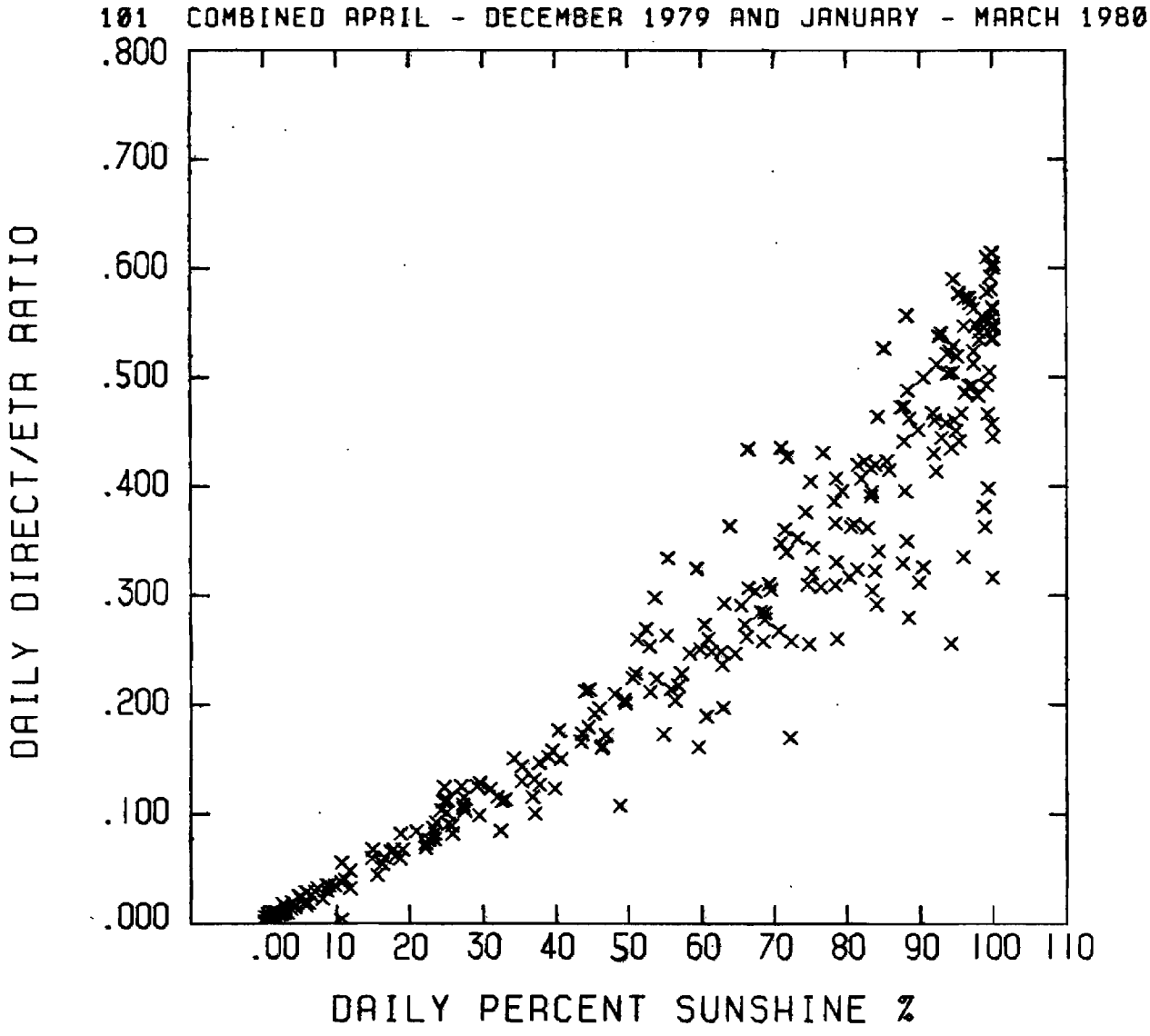

Figure 11. Daily Direct/Extraterrestrial versus Daily Percent Available Sunshine for April 1979 - March 1980

with the Foster Sunshine Switch, a device which automatically compares the output from a shaded and un-shaded photo cell. The Foster Sunshine Switch is not available, however, for measurement of sunshine duration at non-Weather Service sites. At the Atlanta, Georgia Tech site, sunshine duration is measured by the length of burn strip on a Campbell-Stokes sunshine recorder as well as by integrating electronically the duration of pyrheliometer (NIP) direct beam readings above a thereshold of $200W/m^2$.

In Figure 12, hourly percent sunshine measured by the Campbell-Stokes sunshine duration recorder is compared with percent sunshine determined by totaling the time within the hour when the pyrheliometer indicates direct beam radiation over a threshold of $200W/m^2$. This figure shows fairly wide dispersion between percent sunshine determined by these two methods (standard error of linear regression = 15.4%). Two sources of discrepancy affect these results. At low sun angles, the direct beam often exceeds the $200W/m^2$ threshold while the Campbell-Stokes produces no measurable burn trace. For strong sunlight between intermittent clouds, the Campbell Stokes burn strip often looks continuous or nearly-coninuous (100% or near 100% sunshine) while the pyrheliometer readings correctly show only intermediate values of percent sunshine. The first type of error would tend to fill the lower right of the plot in Figure 12, while the second type of error would tend to fill the upper left. Because of the more-or-less symmetrical pattern about a one-to-one regression line in Figure 12, however, an adjustment of the threshold above or below $200W/m^2$ would not appreciably affect the rms error between Campbell-Stokes derived and pyrheliometer-derived percent sunshine. Table 4 shows that, on a monthly average basis, the Campbell-Stokes and pyrheliometer percent sunshine measurements agreed within 1 to 7% for April 1979 - March 1980, with an rms deviation of 3%. Large discrepancies were found between the pyrheliometer derived percent sunshine and the monthly average percent sunshine determined by the Foster Sunshine Switch at the nearby Atlanta airport. Here monthly differences ranged from 6 to 19%,

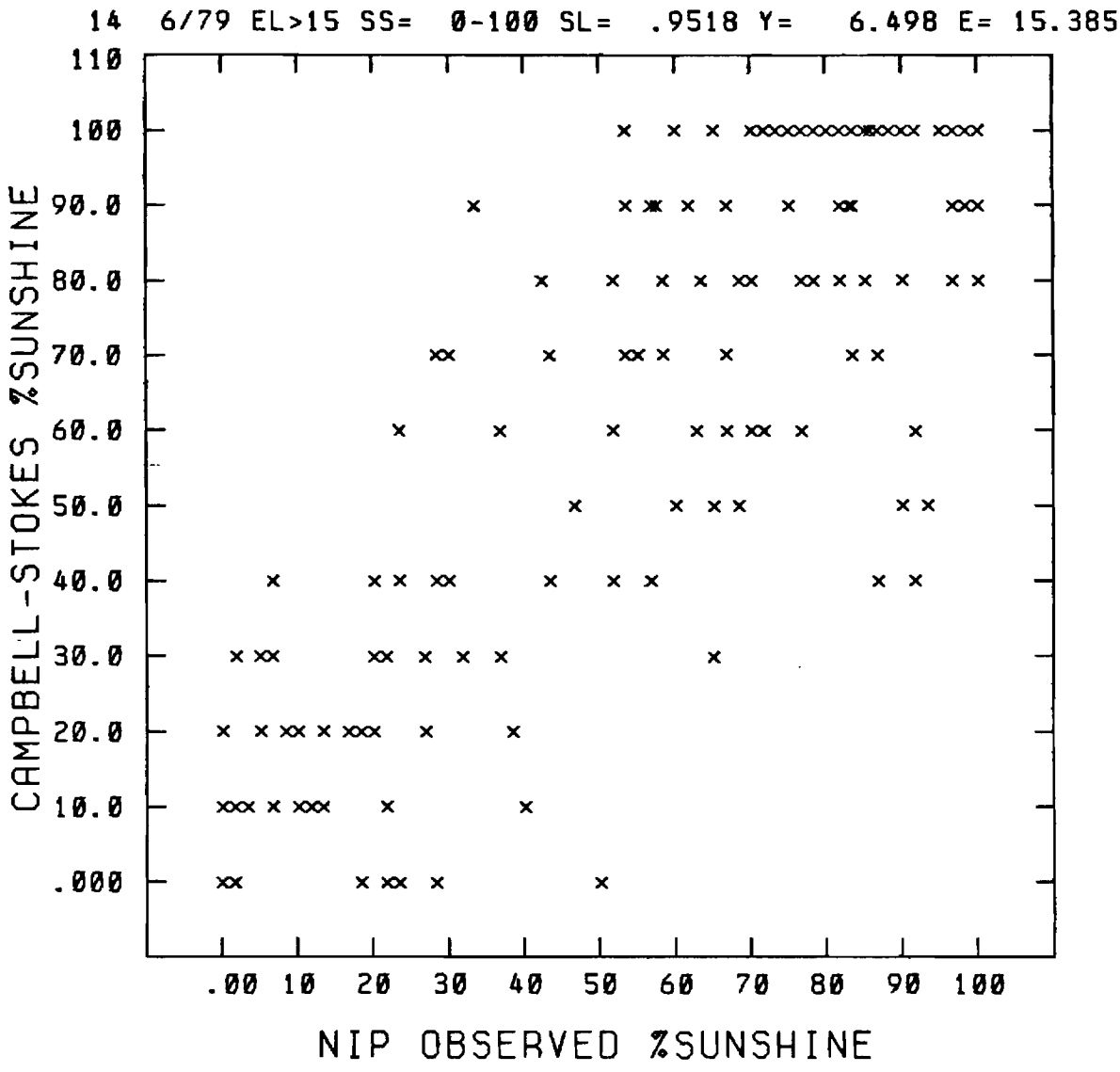

Figure 12. Hourly Percent Sunshine from Campbell-Stokes Recorder vs Percent Sunshine from Pyrheliometer (Threshold 200W/m^2) for June 1979

TABLE 4

Comparison of Available Sunshine Measured by Three Methods

	Atlanta, Georgia Tech Site			Atlanta Airport Site			
	Observed % Sunshine (NIP)	Observed % Sunshine (Campbell-Stokes)	Deviation	Observed % Sunshine (Foster)	Deviation	Sunshine Inferred from Cloud Cover	Deviation
1979							
APR	50	50	0	57	+ 7	37	-13
MAY	39	46	+7	53	+14	32	- 7
JUN	47	48	+1	66	+19	39	- 8
JUL	34	35	+1	51	+17	23	-11
AUG	53	51	-2	68	+15	47	- 6
SEP	29	34	+5	42	+13	27	- 2
OCT	62	61	-1	74	+12	59	- 3
NOV	56	57	+1	62	+ 6	49	- 7
DEC	51	47	-4	59	+ 8	41	-10
1980							
JAN	26	29	+3	35	+ 9	19	- 7
FEB	54	51	-3	66	+12	43	-11
MAR	40	38	-2	52	+12	25	-15
	45	46 (+1)	3 rms	57 (+12)	13 rms	37 (-8)	9 rms

with an rms of 13%.

These results may have great significance on methods to estimate radiation from percent sunshine data (as in the SOLMET "Ersatz" data set which currently forms the basis for much solar energy design). As shown in Table 3, both the pyrheliometer derived and Campbell-Stokes percent sunshine agree better with cloud cover derived percent sunshine than do the Foster Sunshine Switch results, indicating a probable error in the Foster Sunshine Switch data (possibly a response to a lower threshold than 200W/m^2). The SOLMET "Ersatz" percent sunshine regressions which were based on sunshine measured by a Foster Sunshine Switch would very likely be different from regressions derived on the basis of Campbell-Stokes on pyrheliometer derived percent sunshine.

Comparison of Model Tilted Global vs. Observed

If one has measured global radiation on a horizontal surface, G, or measured diffuse radiation, D, on a horizontal surface, and measured direct normal radiation, N, then one can derive the global radiation on a surface tilted at angle β, G_β, by any one of several relations. For the isotropic sky radiation assumption (Liu and Jordan, 1963), the tilted radiation, assuming zero foreground albedo (as appropriate when an artificial horizon is used, as at the Atlanta Georgia Tech site) is given by

$$G_\beta = N\cos\phi + D(1 + \cos\beta)/2 \qquad (1)$$

where ϕ is the angle between the sun and the normal to the tilted surface and D can be the measured diffuse, or the diffuse value derived from direct and global by

$$D = G - N\sin\varepsilon \qquad (2)$$

where ε is the solar elevation angle. At the Atlanta Georgia Tech site the tilt angle β is equal to the local latitude (33.8^o).

Various forms of anisotropic sky radiation model can be assumed. The one due to Klutcher (1979) gives G_β by the relation

$$G_\beta = N\cos\phi + D[(1 + \cos\beta)/2] \times [1 + F\sin^3(\beta/2)][1 + F\cos^2\phi\sin^3(90-\varepsilon)] \qquad (3)$$

where $F = 1 - (D/G)^2$ is a "modulating function" which, for overcast skies (D=G) reduces equation 3 to the isotropic Liu and Jordan relation, and which for clear skies D<<G, makes equation 3 approach the Temps and Coulson (1977) anisotropic sky model.

The Klutcher (1979) anisotropic sky radiation model for insolation estimation on tilted surfaces has been compared to observed, and with the isotropic sky radiation model of Liu and Jordan (1963). Figure 13 shows the Klutcher model (computed from measured direct and horizontal diffuse) versus observed radiation on a latitude tilted surface (with artificial horizon to suppress foreground reflected radiation). For this plot, May 1979, the regression slope is 1.005 and the standard error of regression is 42.1KJ/m^2. For the year April 1979 through March 1980, the rms standard error of regression was 40.4KJ/m^2 for the Klutcher model versus observed, compared to 42.0KJ/m^2 for the Liu and Jordan versus observed. The average regression slope was 1.001 ± 0.014 for the Klutcher comparison versus 0.968 ± 0.021 for the Liu and Jordan comparison. Thus, the Liu and Jordan tended to underestimate the observed tilted radiation, but with a residual scatter comparable to that of the Klutcher model. For the period April - September 1979, the Klutcher model yielded 45.6KJ/m^2 rms standard regression error compared to 33.1KJ/m^2 for the Liu and Jordan. In October 1979 through March 1980, the trend was reversed with 34.3KJ/m^2 rms standard error of regression for the Klutcher model versus 49.2KJ/m^2 for the Liu and Jordan model. These results suggest that the Klutcher model is better during low sun angle (cold season) months but that (if the tendency of Liu and Jordan model to underestimate the observed is removed) the Liu and Jordan model is actually better, on average, in the warm season months when frequent cumulus cloud conditions occur as in Atlanta.

Diffuse Radiation Plotting Methods

Various plotting schemes for diffuse radiation have been used. Figures

14-21 compare some of these plotting schemes. For example, the form in Figure 16, diffuse/(horizontal ETR) versus global/(horizontal ETR) was used by Randall (1977) in his direct beam model. The diffuse plot is used by Randall in the following way: first, the measured global radiation is used in a regression relation to estimate the direct beam (including a random perturbation part), second, the diffuse radiation implied by this combination of measured global and modeled direct is compared with upper and lower bounds for diffuse implied by plots such as Figure 16; if the estimated diffuse exceeds these bounds, a new direct beam value is estimated until a diffuse within the proper bounds results.

The diffuse plot in the form of Figure 18 may be more suited for this purpose. This plot shows the ratio of diffuse-to-global versus the direct-to-ETR ratio. For a given measured global and Randall-modeled direct, Figure 18 would seem to give a tighter range of allowed diffuse values because of the smaller scatter than in Figure 16. It should be noted that the abscissa and ordinate in Figure 18 are not entirely independent, being a plot of (global minus direct)/global versus direct, i.e., values of diffuse/global must go to 1 as direct approaches zero. However, similar constraints apply on some of the other plots which show higher degrees of scatter, e.g., in Figure 16 diffuse/(global ETR) must equal global/(global ETR) when the global is small (low direct beam).

Ratios of daily total diffuse horizontal to daily total global radiation versus daily global over extraterrestrial radiation, as in Figure 21, have been used by Liu and Jordan (1960), Ruth and Chant (1976), Collares-Pereira and Rabl (1979), and others, as an interim step in the computation of daily total radiation on a tilted surface when only daily total global horizontal radiation is known. The inset in Figure 21 shows that the observed data for 1979-80 from the Atlanta Georgia Tech site agree more closely with the original Liu and Jordan results than the Ruth and Chant or Collares-Pereira and Rabl (CPR)

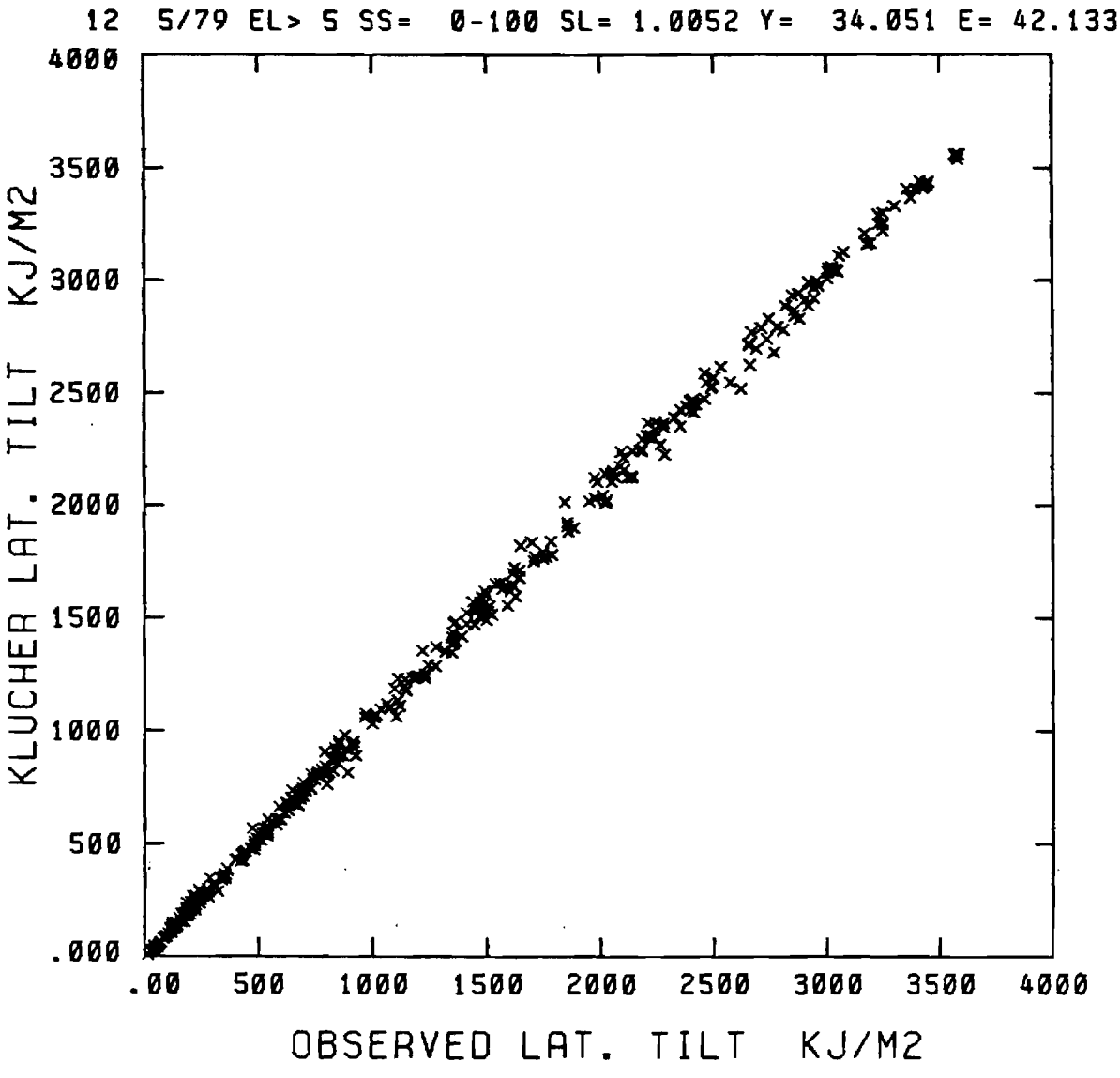

Figure 13. Hourly Klutcher Model Latitude Tilted Global versus Observed for May 1979

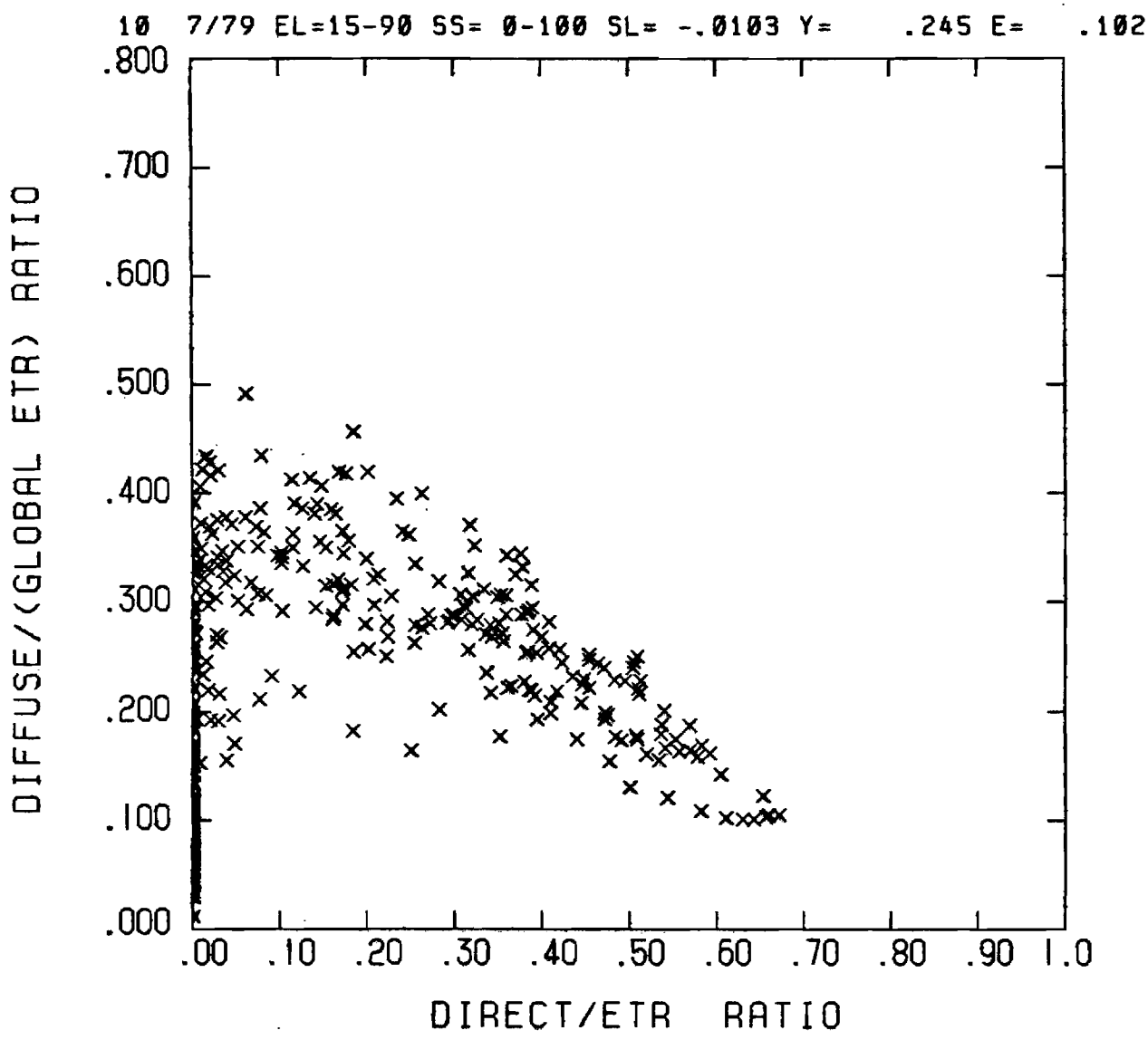

Figure 14. Hourly Diffuse/(Extraterrestrial on Horizontal Surface) versus Direct/Extraterrestrial for July 1979

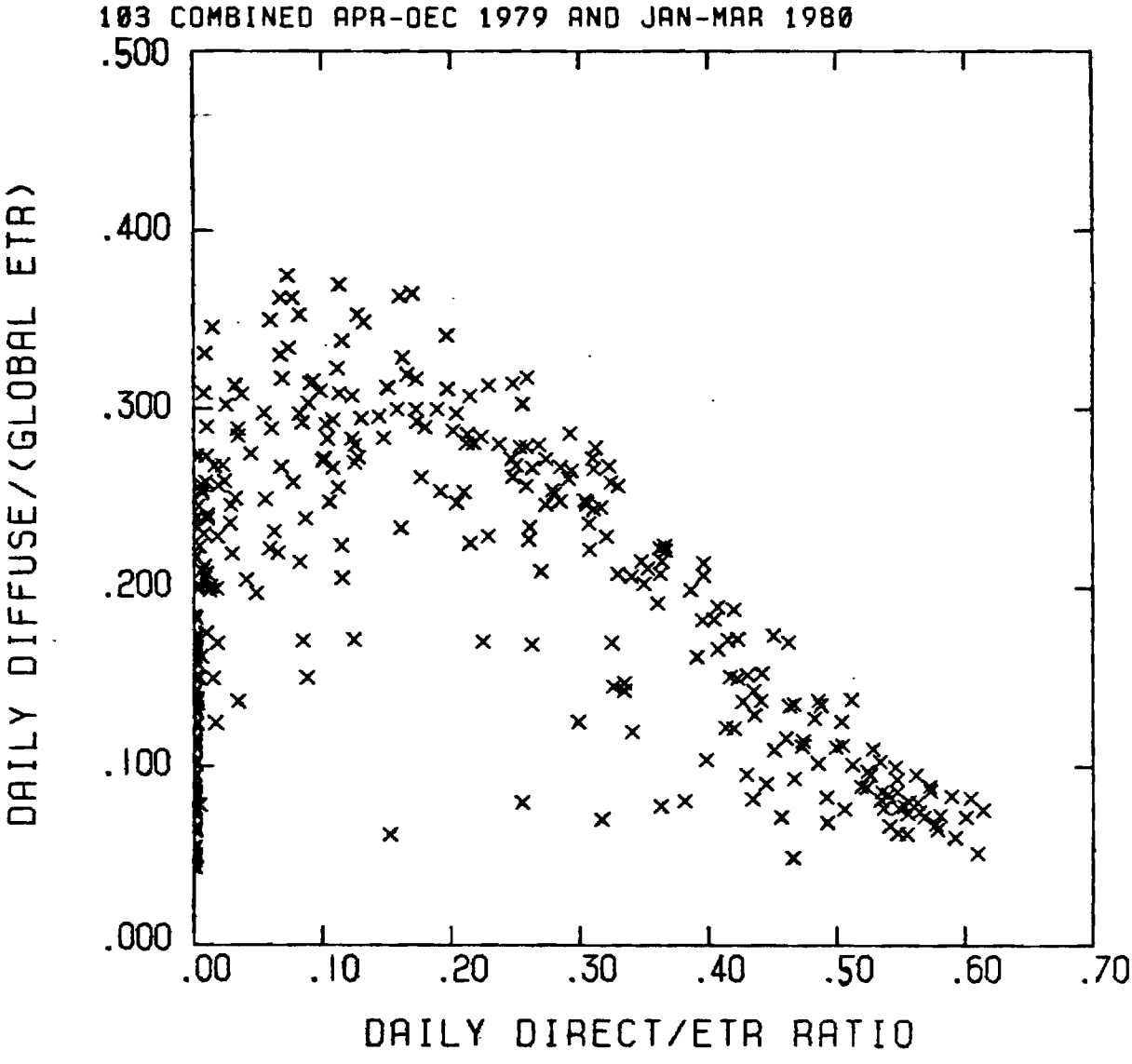

Figure 15. As in Figure 14 for One Year of Daily Values

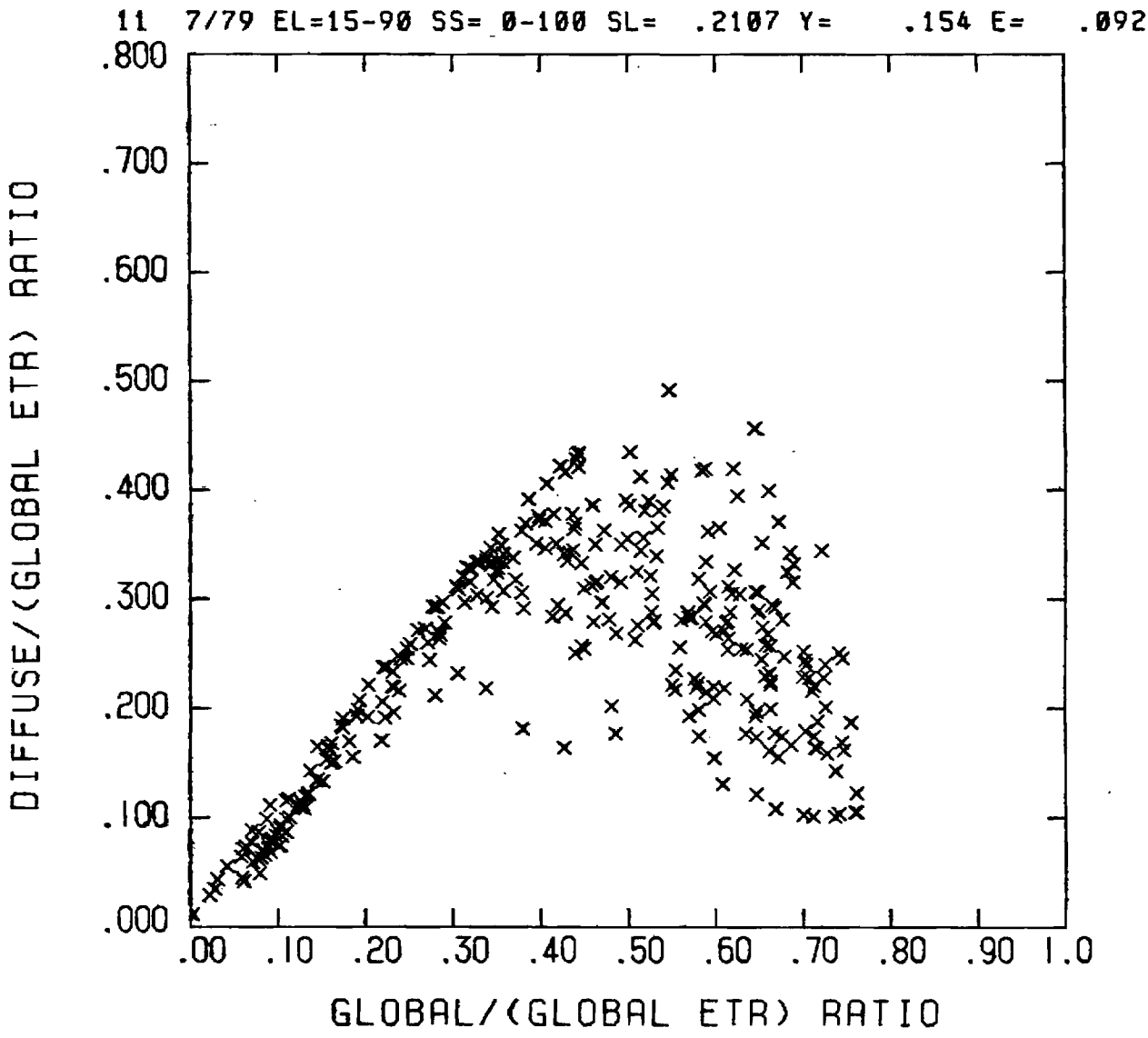

Figure 16. Hourly Diffuse/(Extraterrestrial on Horizontal Surface) versus Global/(Extraterrestrial on Horizontal Surface) for July 1979

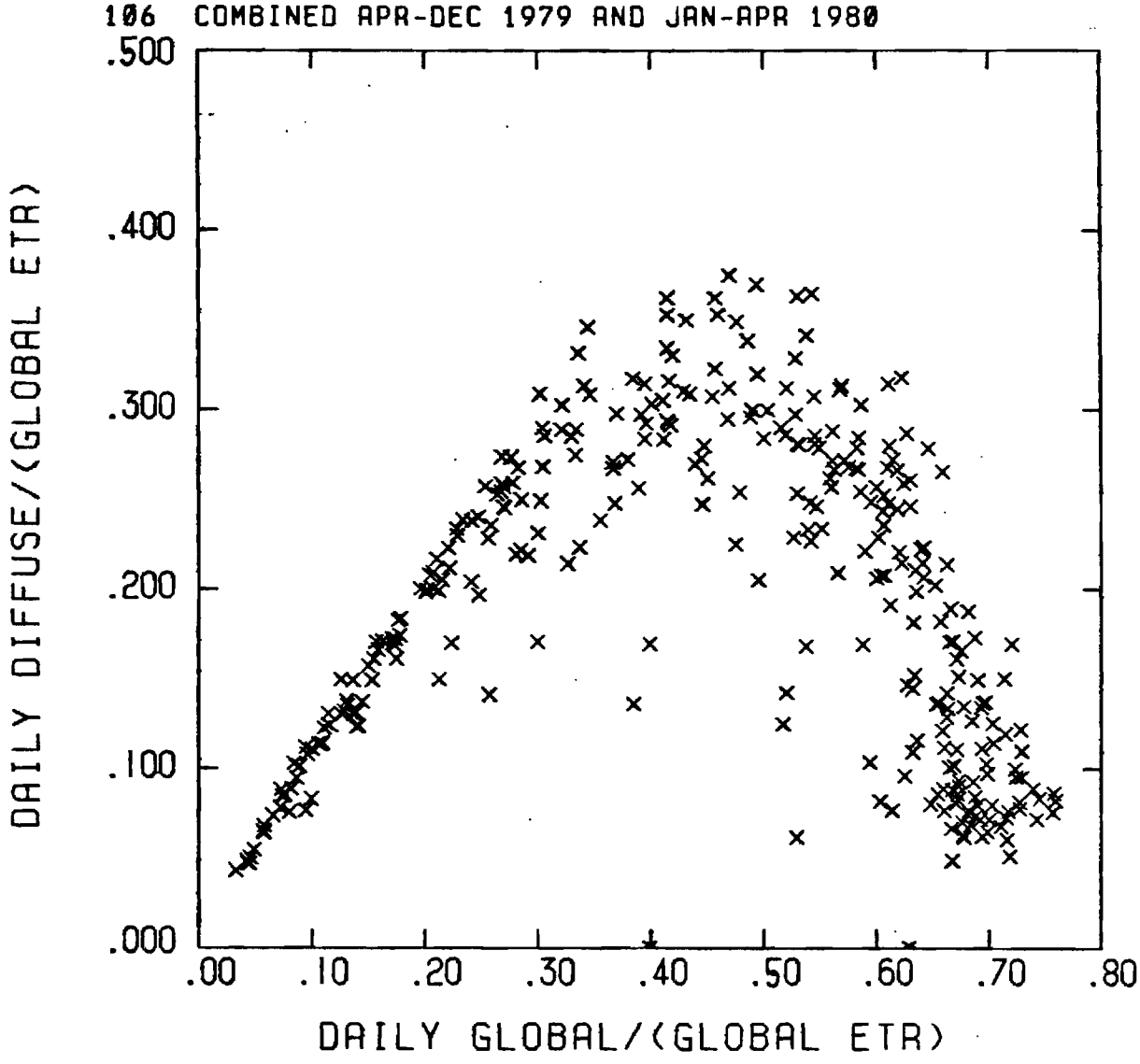

Figure 17. As in Figure 16 for One Year of Daily Values

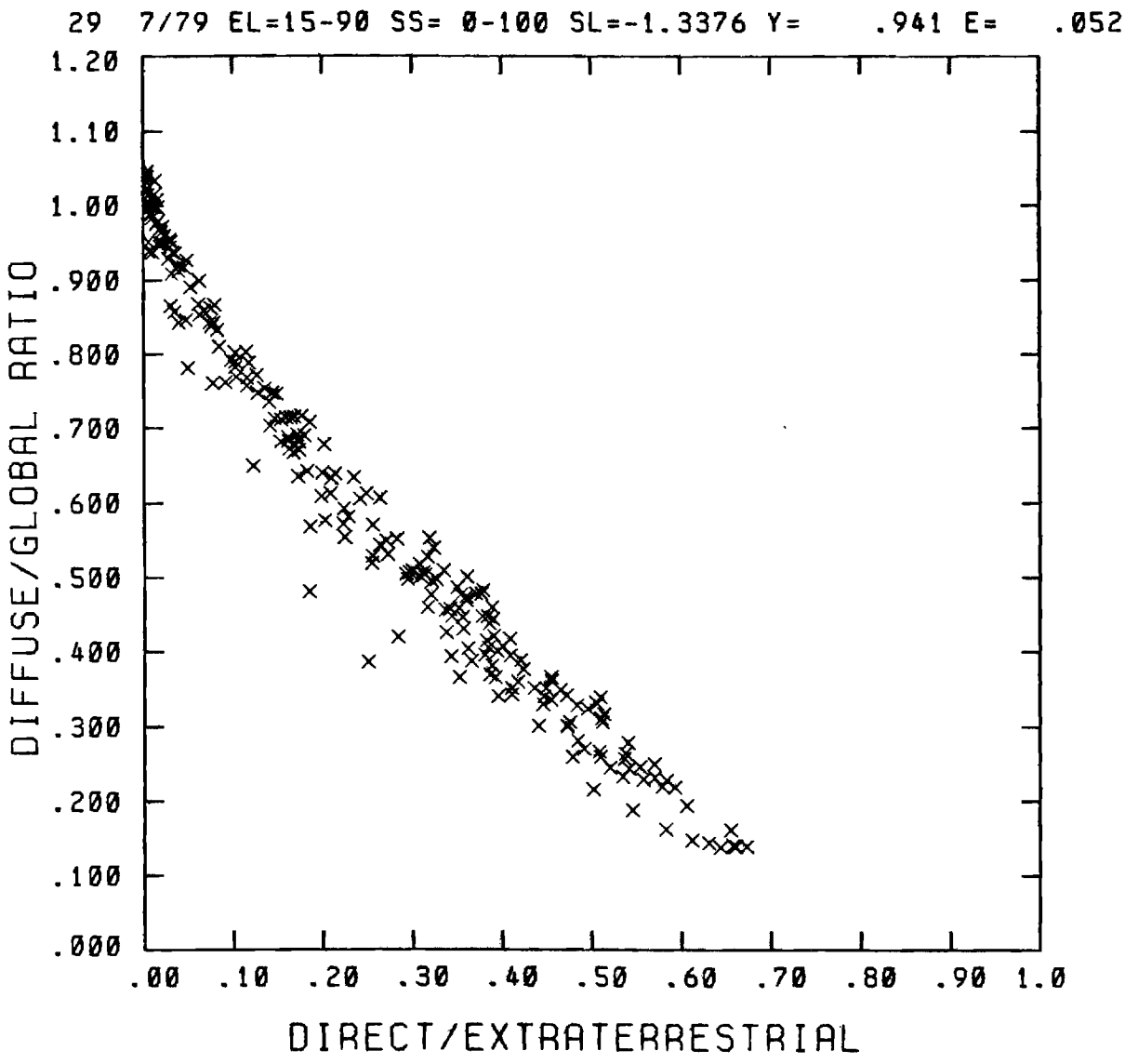

Figure 18. Hourly Diffuse/Global versus Direct/Extraterrestrial for July 1979

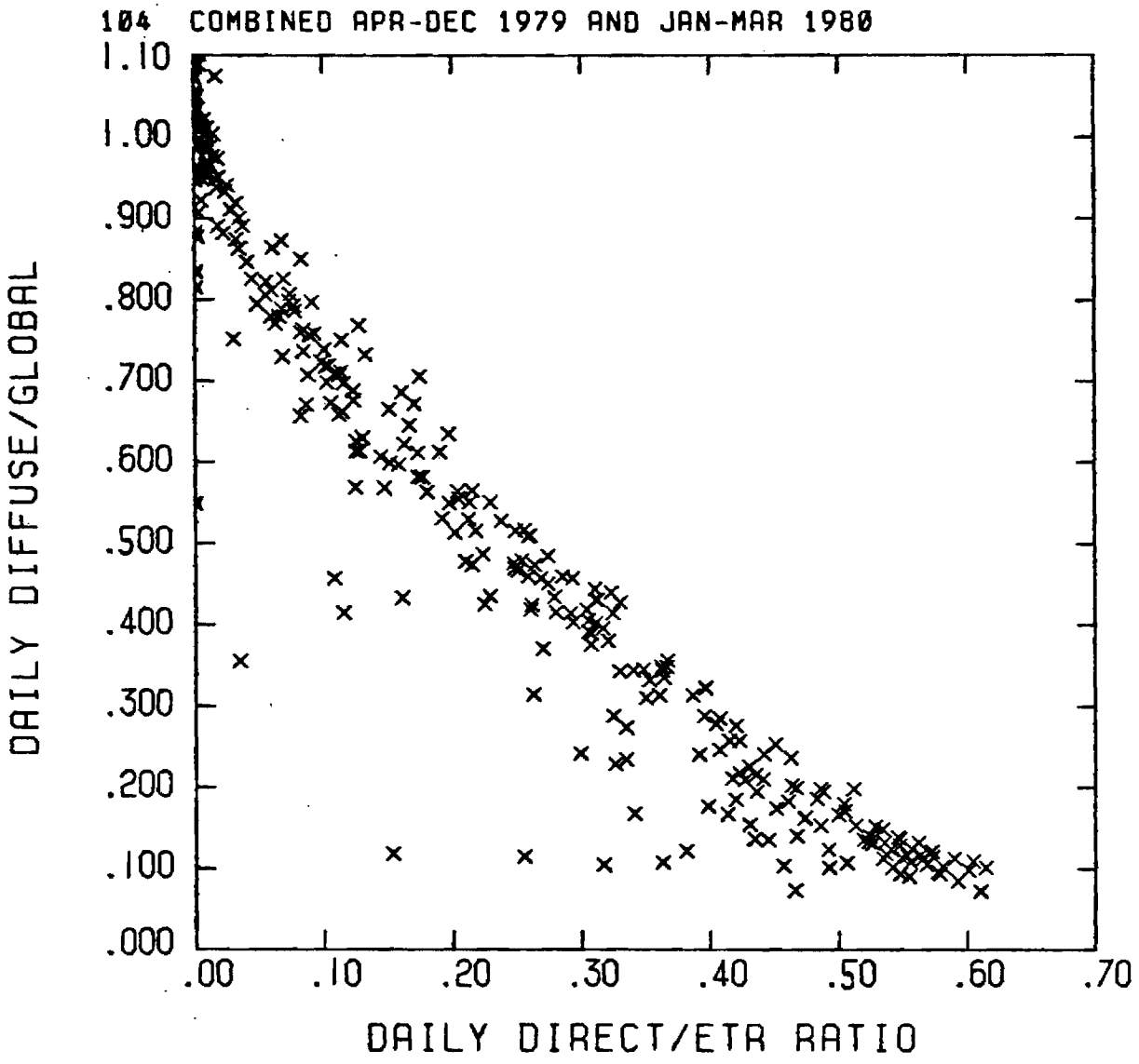

Figure 19. As in Figure 18 for One Year of Daily Values

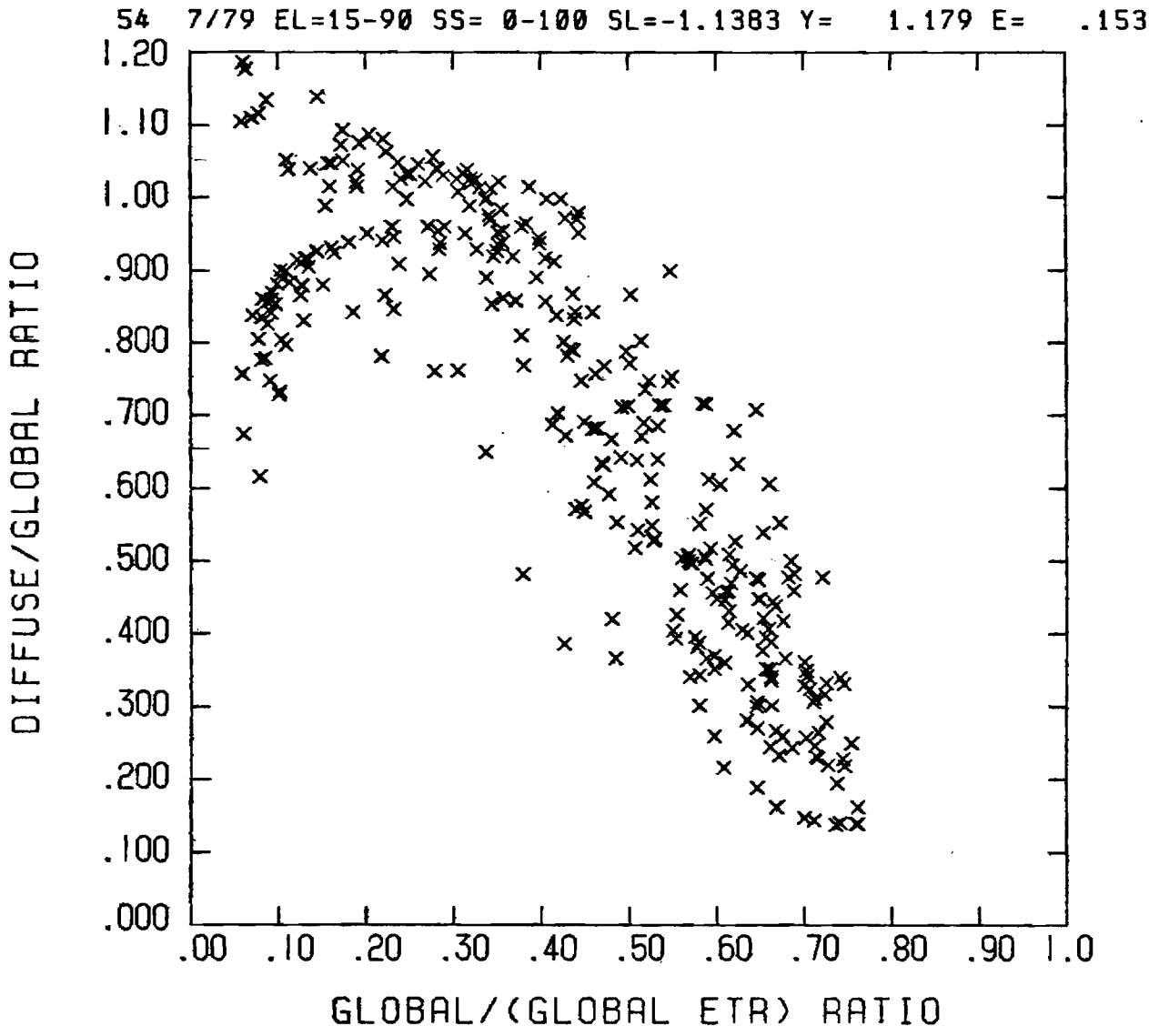

Figure 20. Hourly Diffuse/Global versus Global/(Extraterrestrial on Horizontal Surface) for July 1979

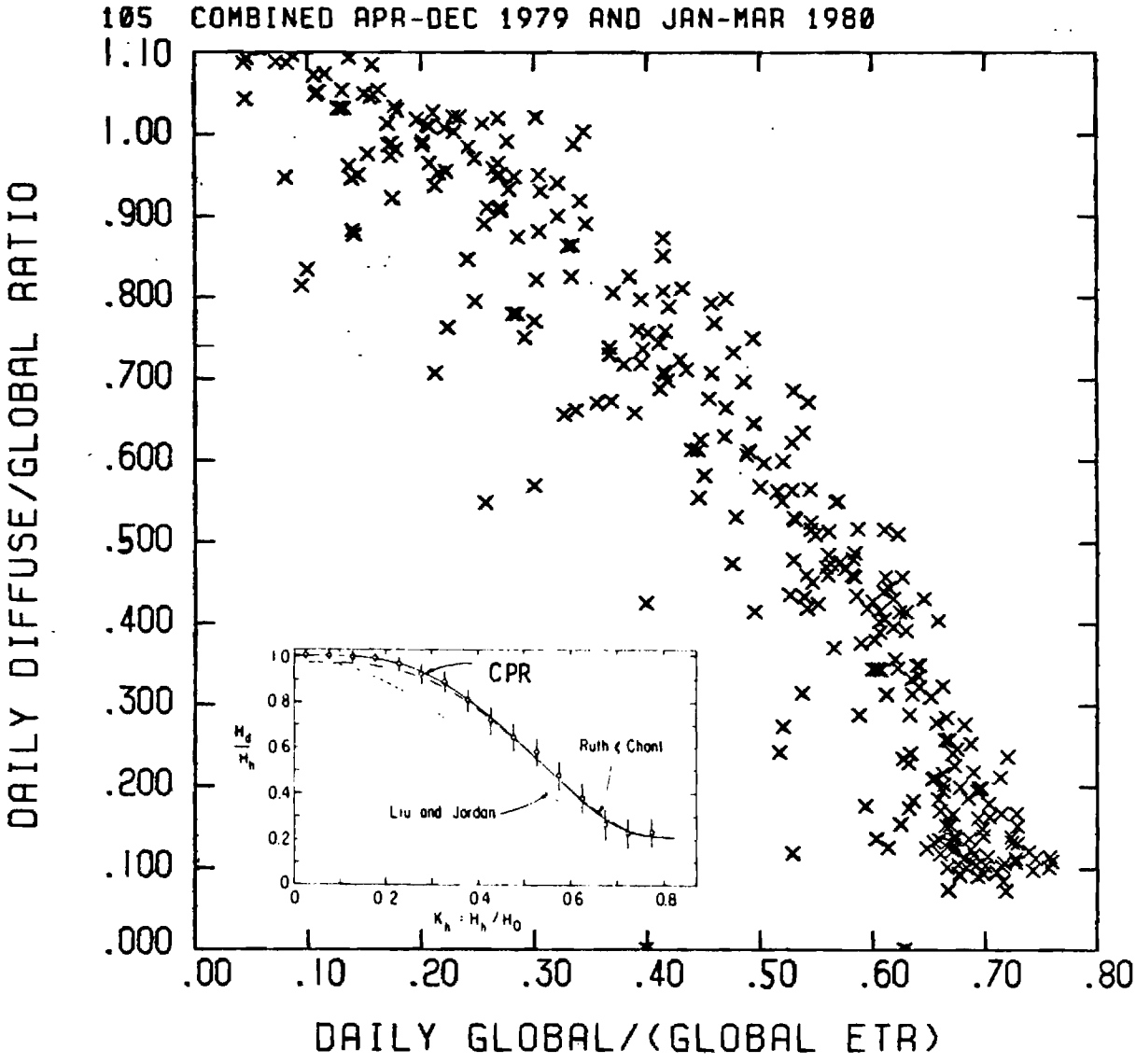

Figure 21. As in Figure 20 for One Year of Daily Values

results, at high (>0.65) global/ETR ratios, although the data at low (<0.5) global/ETR ratios agrees better with the Ruth and Chant and CPR results. The Ruth and Chant and the CPR results are based on diffuse radiation measured with a shadow band, with assumed shadow band corrections applied. The Georgia Tech data in Figure 21 are from diffuse measured with a tracking disk system, which requires no such correction.

Ultraviolet vs. Global Radiation

Ultraviolet (UV) measurements at the Atlanta Georgia Tech site are taken with an Eppley TUVR pyranometer. This instrument has a bell shaped response over the approximate effective range of 0.30 to 0.39μ. This range includes the UV-B band (0.280 to 0.315μ) which is of concern because of its skin damaging effects through erythema (sunburn). Materials degradation by UV radiation is another important reason for its measurement and characterization.

Because of the bell shaped instrument transmission and the spectral dependence of incident flux on relative air mass, the overall UV instrument response is expected to vary with air mass. Figures 22-25 show results of UV measurements at 0.30-0.39μ as a function of relative air mass and cloud cover. Under clear skies (99-100% sunshine), Figure 22 shows that the UV/Global ratio is about 5.2% at relative air mass 1 and 4.5% at relative air mass 2, with a steady decrease with air mass. These results are consistent over the year of observation from April 1979 through March 1980. In contrast, for cloudy skies (0-1% sunshine) Figure 23 shows much more scatter of UV/global ratio and not nearly so much trend with air mass. When plotted as UV versus global, as in Figures 24 and 25, clear sky values display a concave-upward, non-linear trend of UV versus global for clear skies, but a concave-downward, non-linear trend of UV versus global for cloudy skies. This illustrates the well-known effect that the suntan and skin cancer producing UV can actually be greater for a given amount of global radiation on a cloudy or partly cloudy day than for the same amount of global radiation on a clear day.

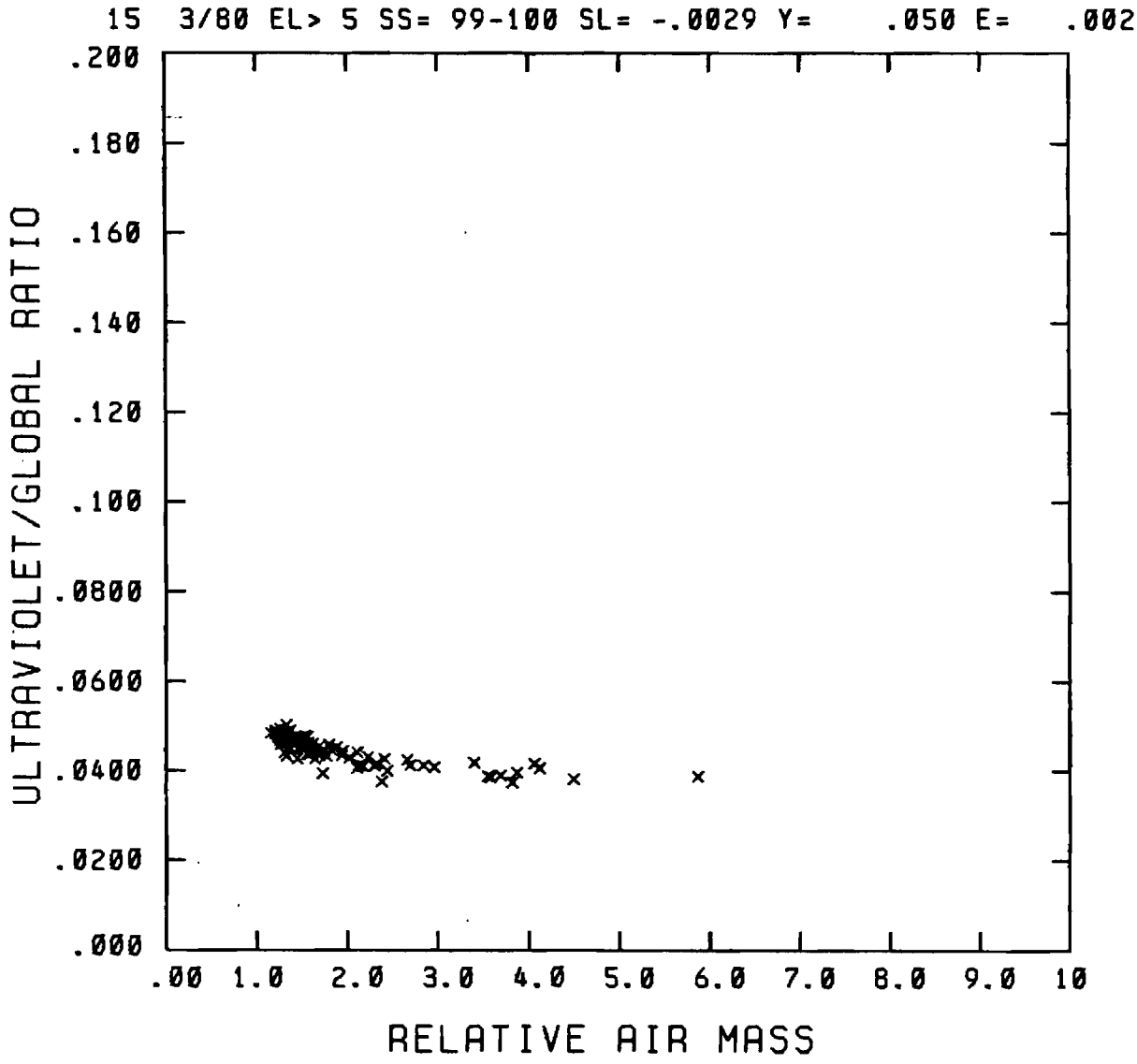

Figure 22. Hourly Ultraviolet (0.30-0.39μ)-to-Global Ratio versus Relative Air Mass for March 1980, Clear Skies

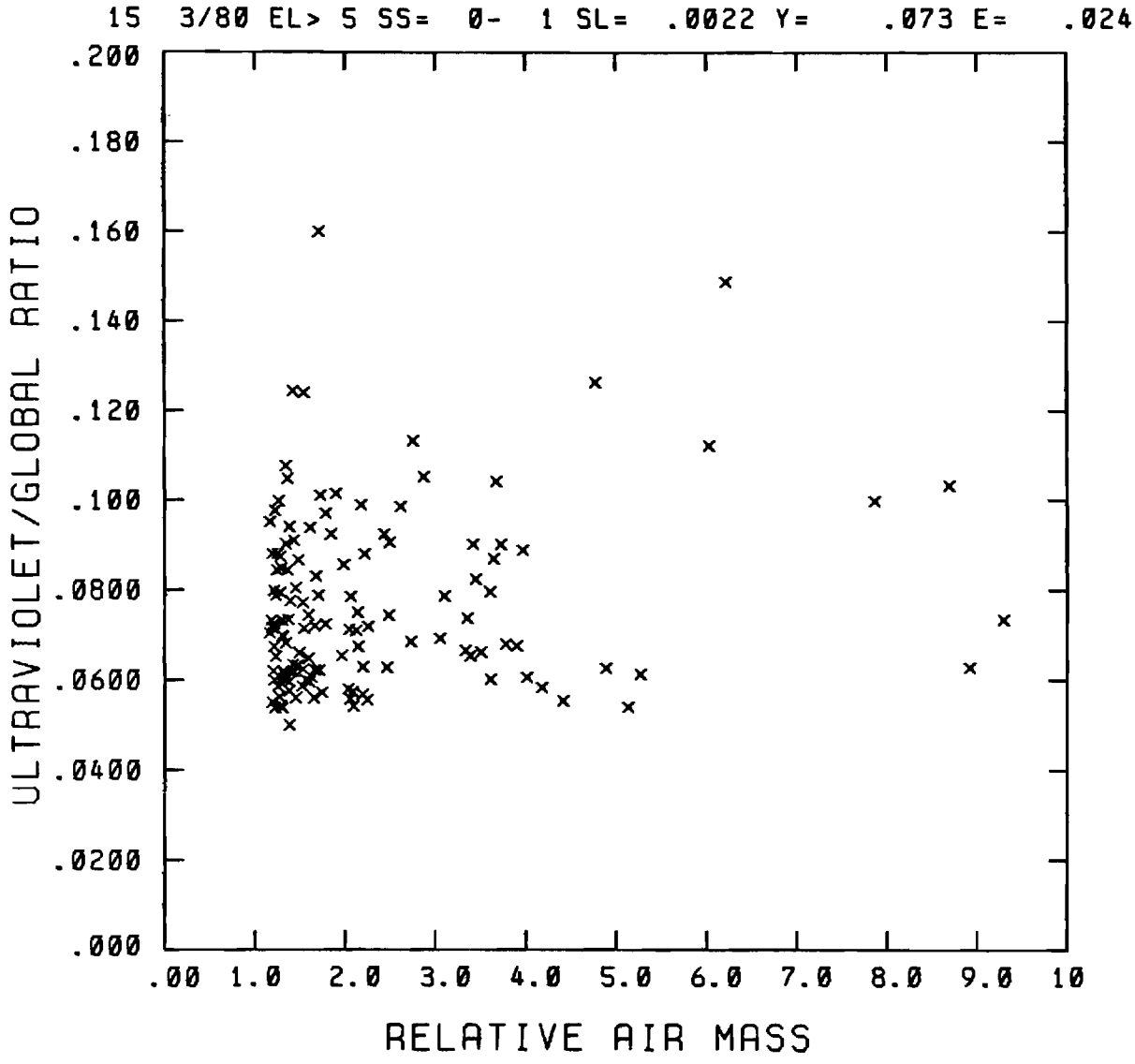

Figure 23. Hourly Ultraviolet (0.30-0.39μ)-to-Global Ratio versus relative Air Mass for March 1980, Cloudy Skies

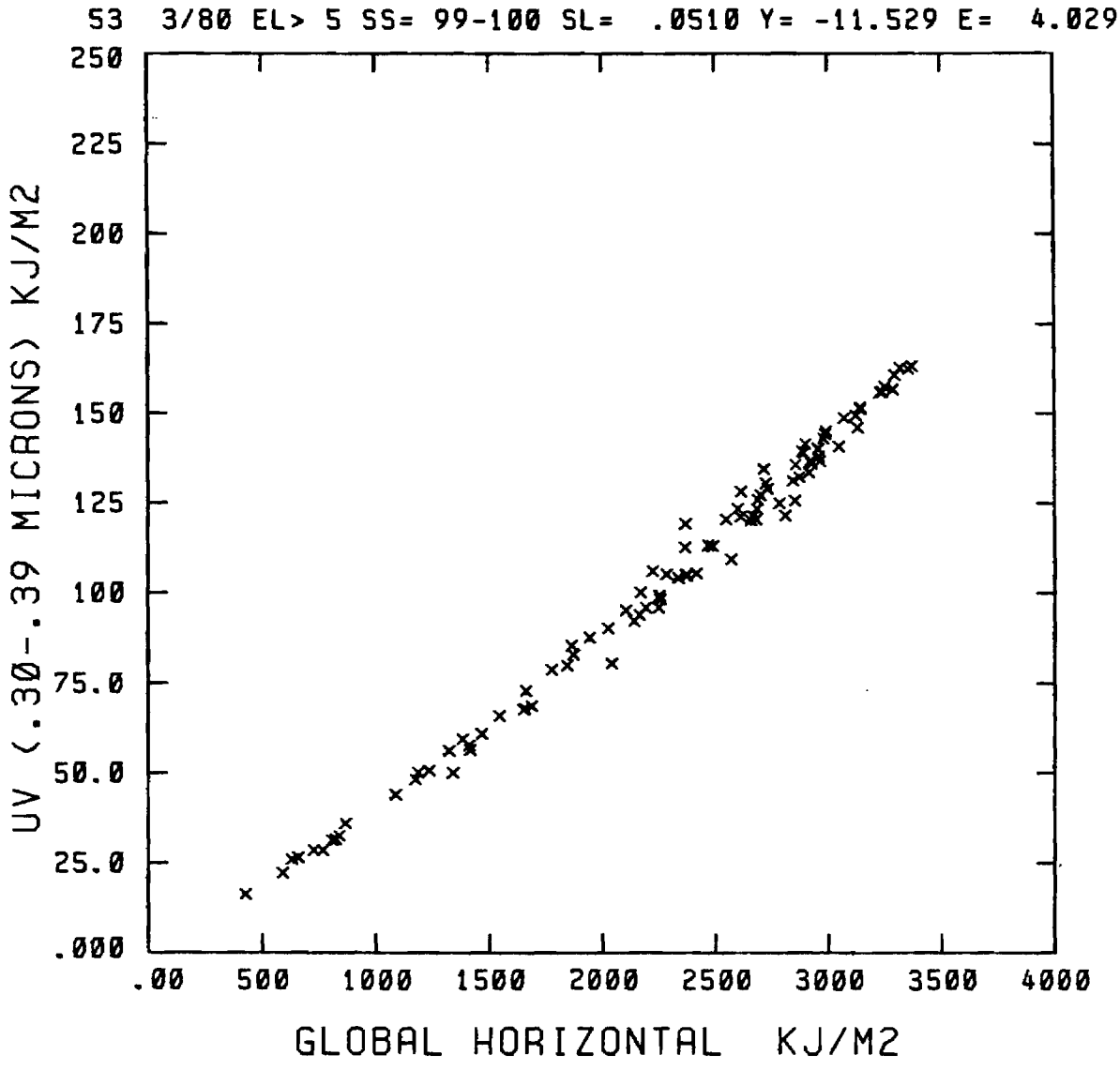

Figure 24. Hourly Ultraviolet (0.30-0.39μ) versus Global for March 1980, Clear Skies

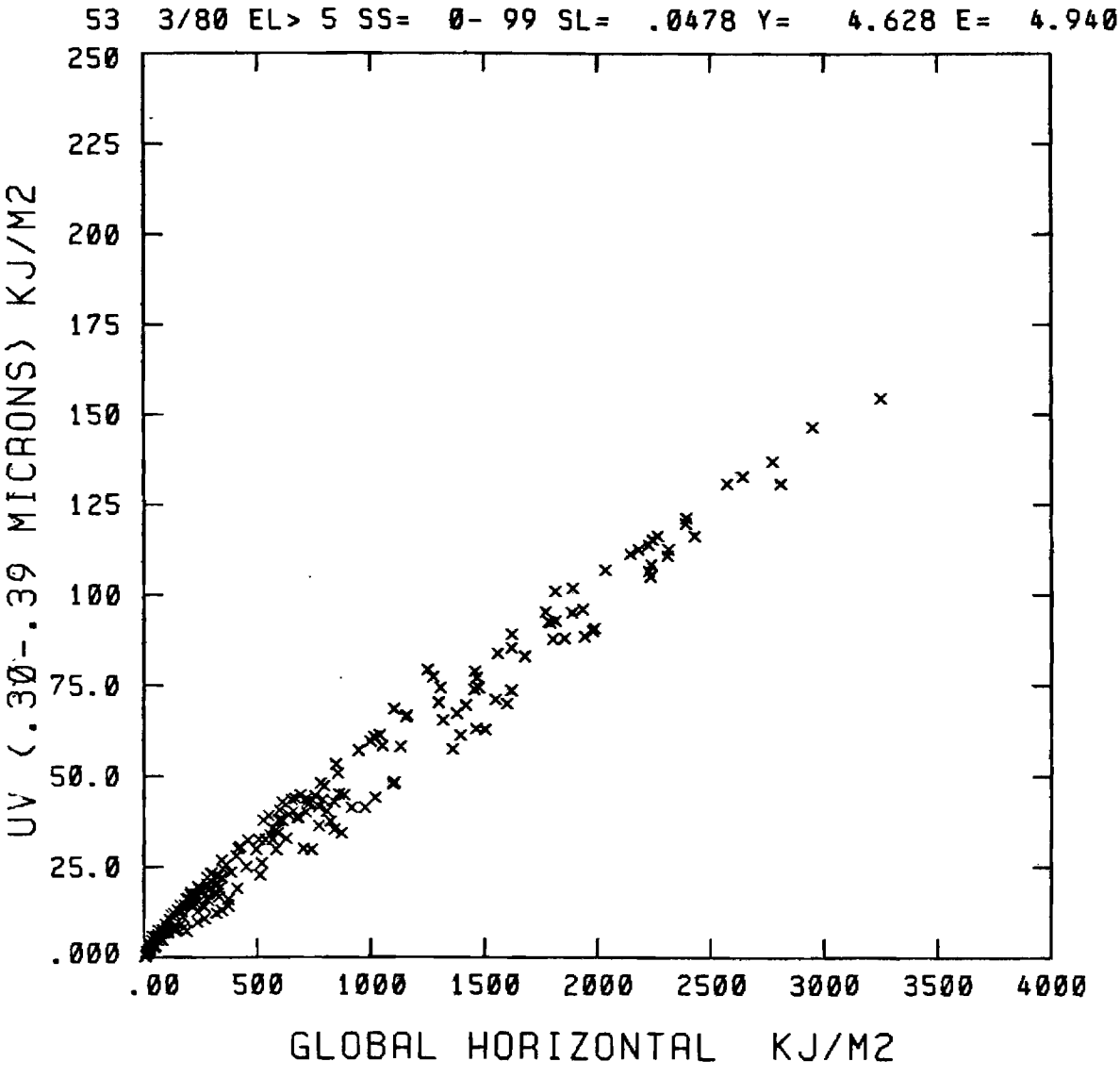

Figure 25. Hourly Ultraviolet (0.30-0.39μ) versus Global for March 1980, Overcast and Partly Cloudy Skies

Annual Time Series Graphs

In addition to time series graphs of hourly data (as in Figures 1-4) and regression type plots for both hourly and daily data (as in Figures 7-25), a graphical display method has been developed for time series plots of daily data. Examples are shown in Figures 26-29, all of which cover the one-year period April 1979 through March 1980.

Figure 26 is a plot of daily average temperature (circles) and daily values of minimum and maximum hourly temperature (end points of vertical lines). For solar radiation parameters, which are totaled for the day instead of averaged, plots in Figures 27-29 show the daily totals as circles and the minimum (zero) and maximum hourly values as the end points of the lines.

Comparison of Figures 27 and 28 dramatically illustrates the annual smoothing effect obtained by tilting the radiometer at the latitude angle. Figure 29 shows the direct normal to be fairly smooth over the year, despite the varying length of daylight hours with season. In fact, because of cloud cover and turbidity effects, minimum daily totals of direct normal occur in the summar months July and August 1979 in Figure 29.

Distributions and Joint Statistics of Daily Values

At the U.C. Davis project review meeting it has suggested by Don Portman of the University of Michigan that the eight SEMRATS universities provide data bases and statistical analysis programs for evaluating probability and joint probability distributions. Figure 30 gives an example of the operation of such a program for statistical analysis of daily averages, totals, minimums or maximums of the Atlanta Georgia Tech solar radiation or meteorological data. The example in Figure 30 evaluates the number of occurences during April-September 1979 of the days with average temperatures above 21^{o}C and total direct normal radiation between 20 and 24 MJ/m^{2}. The program evaluates the total number of occurences of this event as well as the number of occurences of various periods for which this event persists for various numbers of consecutive days.

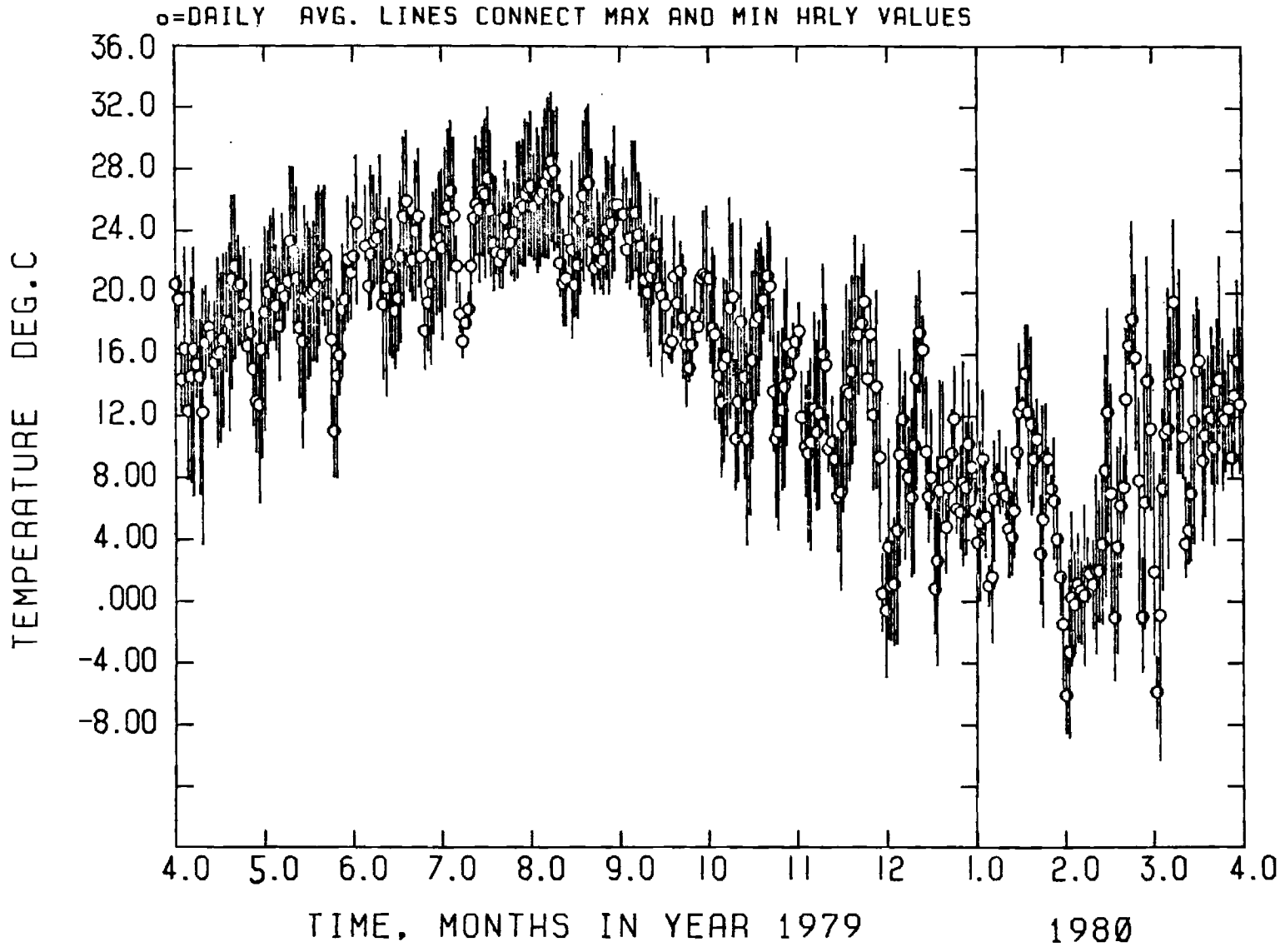

Figure 26. Annual Plot of Daily Average Temperature and Daily Values of Minimum and Maximum Hourly Temperatures

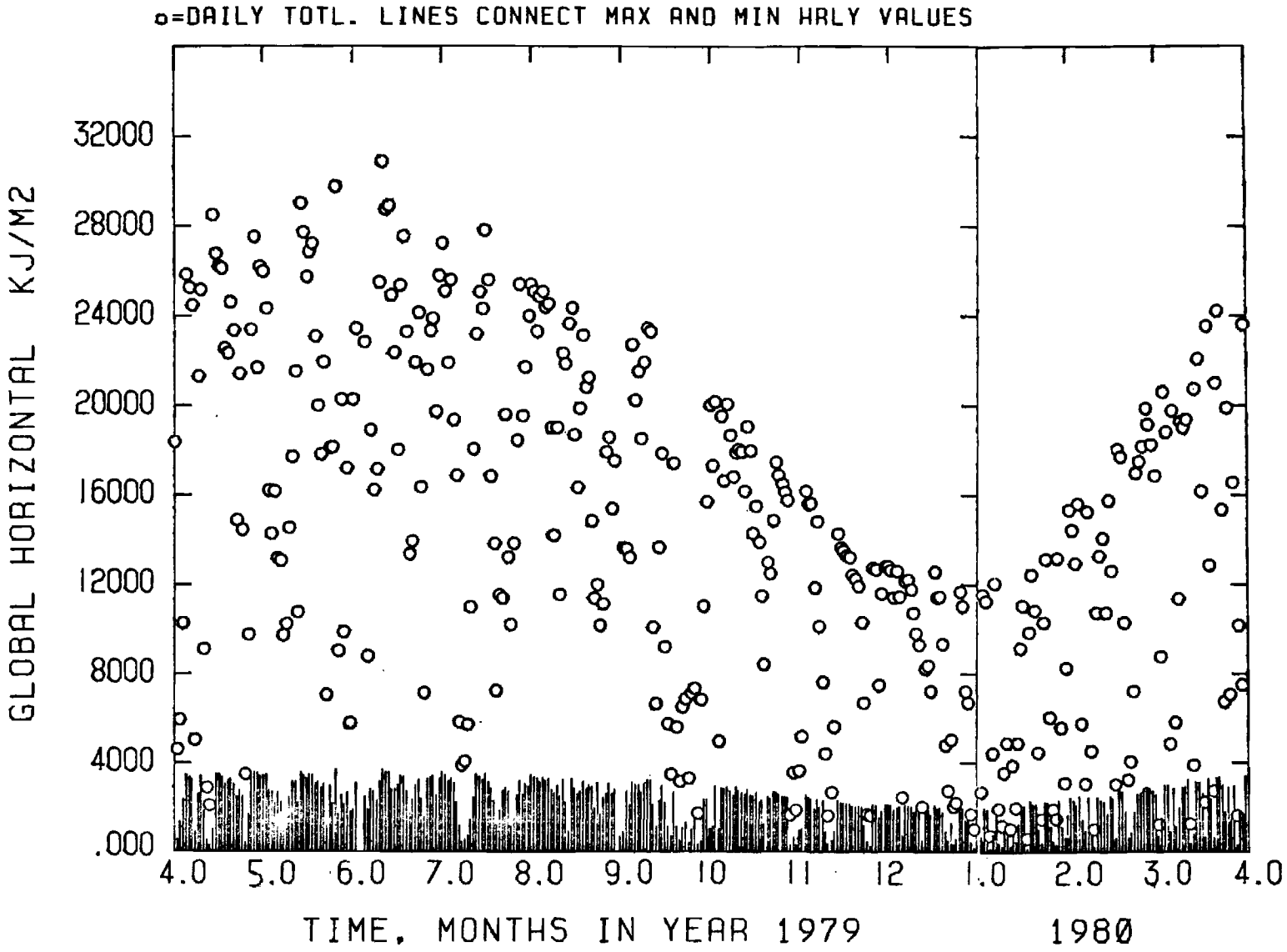

Figure 27. Annual Plot of Daily Total Global Horizontal Radiation and Maximum and Minimum (zero) Hourly Values

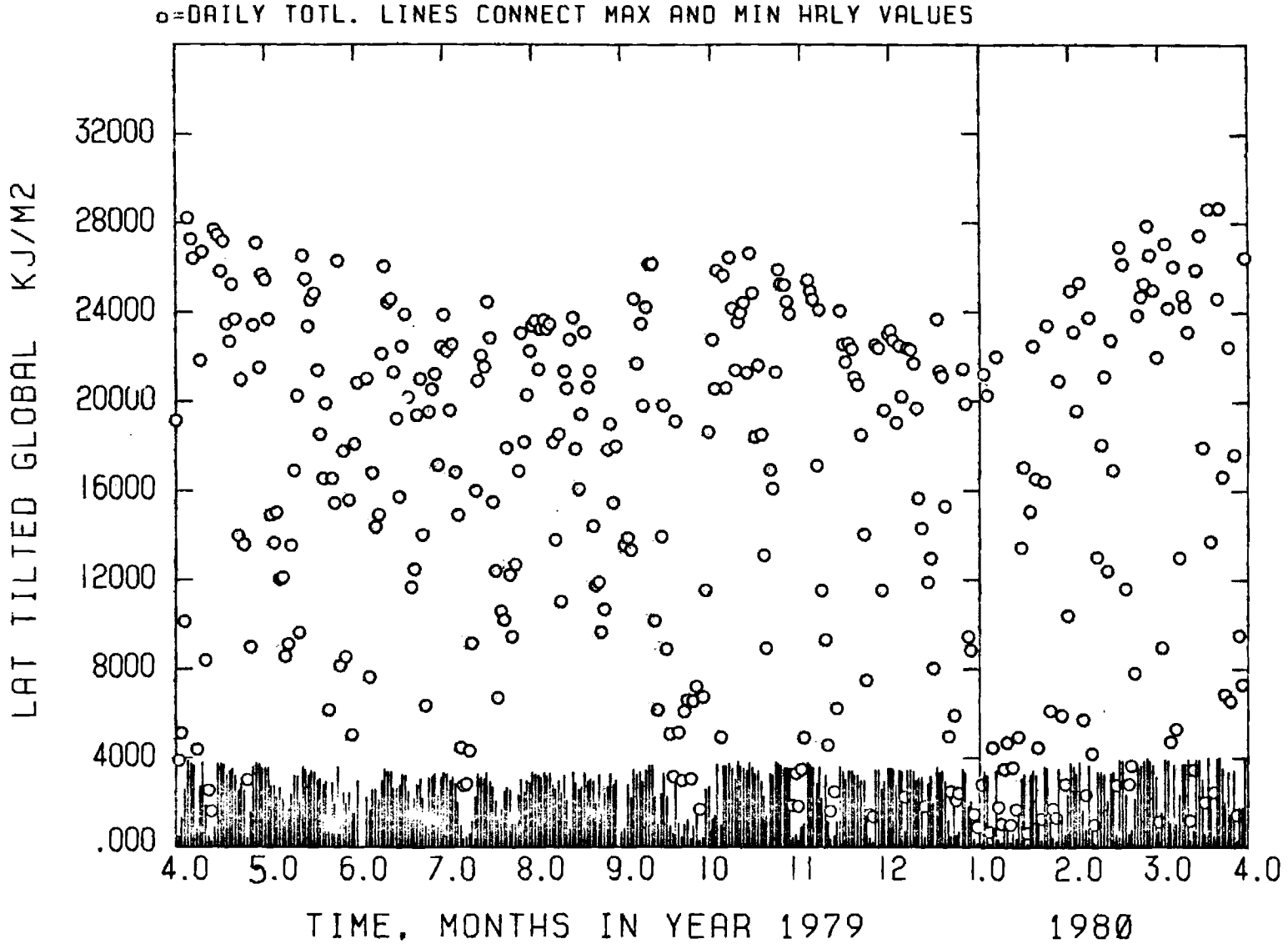

Figure 28. As in Figure 27 for Latitude Tilted Global Radiation (with artificial horizon)

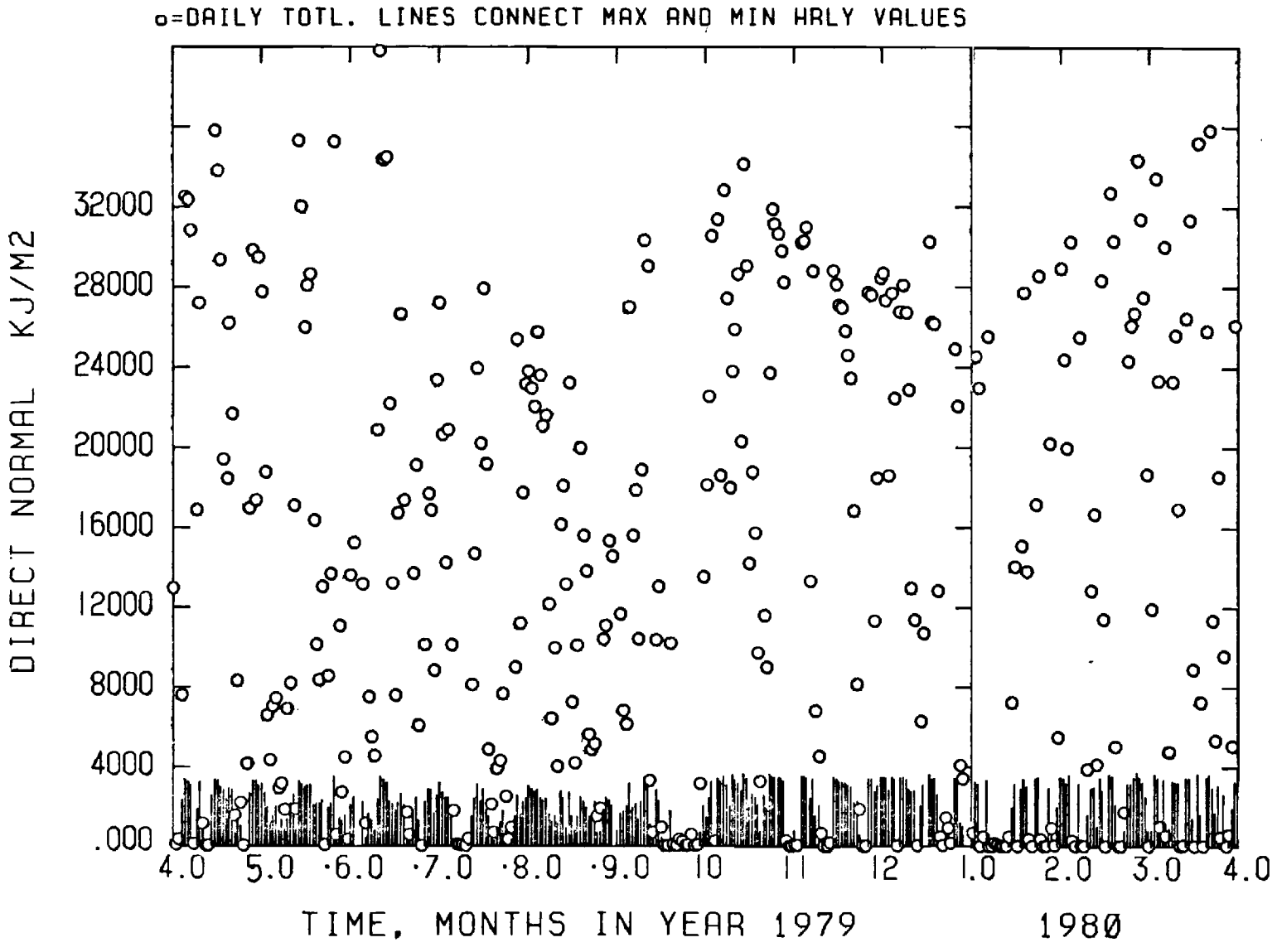

Figure 29. As in Figure 27 for Daily Total of Direct Normal Radiation

```
 ENTER NUMBER OF MONTHS FOR STATS, OR 12 FOR ANNUAL
 OR 0 TO TERMINATE

6
 ENTER MONTHS FOR STATS
4 5 6 7 8 9
 ENTER NUMBER OF PARAMETERS FOR STATS, 1-4
2
 FOR EACH PARAMETER, ENTER 2-CHARACTER MNEMONIC AND
 'AVG' FOR AVERAGE OR 'TOT' FOR TOTAL; 'MAX' FOR MAXIMUM; OR 'MIN'
 FOR MINIMUM AS THE PARAMETER TO BE EVALUATED. FORMAT IS A2,1X,A3.
TL AVG
DN TOT
 FOR EACH PARAMETER, ENTER THE LOW AND HIGH VALUES FOR
 SCANNING STATISTICS
 ENTER LOW AND HIGH VALUES FOR  AVG TL IN DEG.C
21 99
 ENTER LOW AND HIGH VALUES FOR  TOT DN IN KJ/M2
20000 24000
 SCANNING DDB FILE


 NUMBER OF OCCURRENCES OF:

    21.0 .LE.     AVG  TL     .LT.     99.0 DEG.C
 20000.0 .LE.     TOT  DN     .LT. 24000.0 KJ/M2

 FOR YEAR 79  MONTHS   4  5  6  7  8  9

 NO. DURATIONS OF 1 DAYS=    6  , OF .GE. 1 DAYS =    9
 NO. DURATIONS OF 2 DAYS=    1  , OF .GE. 2 DAYS =    3
 NO. DURATIONS OF 3 DAYS=    1  , OF .GE. 3 DAYS =    2
 NO. DURATIONS OF 4 DAYS=    1  , OF .GE. 4 DAYS =    1
 NO. DURATIONS OF 5 DAYS=    0  , OF .GE. 5 DAYS =    0
 NO. DURATIONS OF 6 DAYS=    0  , OF .GE. 6 DAYS =    0
 NO. DURATIONS                      .GE. 7 DAYS =    0
 TOTAL NO. OF OCCURRENCES =  15
 ENTER NUMBER OF MONTHS FOR STATS, OR 12 FOR ANNUAL
 OR 0 TO TERMINATE
0
 NORMAL TERMINATION
```

Figure 30. Example Output of Statistics Program for Analysis of Daily Averages, Total, Minimum, or Maximums

Figures 31-32 give an example of how this statistics program may be applied to study joint frequency statistics. These figures compare distribution of direct normal radiation in the Warm Season (April-September 1979) "hot" days ($\bar{T} \geq 21^{o}C$) versus "average" days ($\bar{T} < 21^{o}C$) and Cold Season (October 1979 - March 1980) "cold" days ($\bar{T} < 10^{o}C$) versus "average" days ($\bar{T} \geq 10^{o}C$). In the Cold Season, the distribution of direct normal radiation is very similar on cold days and average days, except for more frequent overcast conditions (daily direct = zero) on cold days (i.e. coldest average temperatures are associated with daytime overcast rather than clear nightime radiation cooling). Except for overcast conditions, the most frequent values of daily direct are 24-30 MJ/m^2-day. For the Warm Season, there are distinctly different distributions of direct normal on average days versus hot days. Overcast conditions are more frequent on average days than hot days (i.e. clear to partly cloudy goes with hot temperatures in the warm season). For the Warm Season hot days, the most frequent daily direct normal values are between 0 and 16MJ/m^2-day with a secondary peak at 20-24 MJ/m^2-day. For Warm Season average days, the most frequent daily direct radiation values are 0-4 MJ/m^2-day, with other peaks at 16-20 MJ/m^2-day and 28-36 MJ/m^2-day.

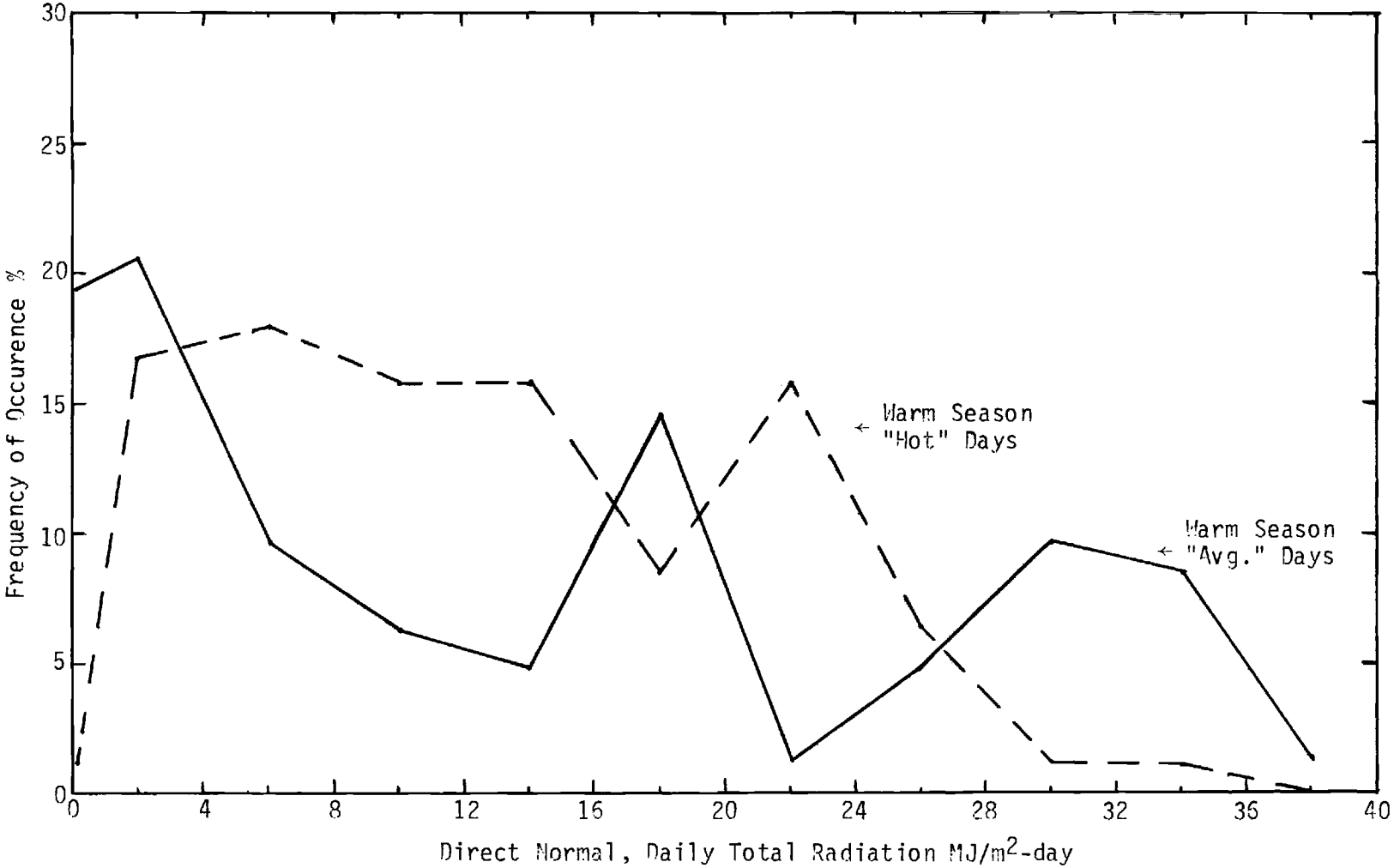

Figure 31. Comparison of Direct Normal Radiation Probability Distributions for Warm Season (April-September 1979) "Hot" Days ($\bar{T} \geq 21^{o}C$) versus "Average" Days ($\bar{T} < 21^{o}C$)

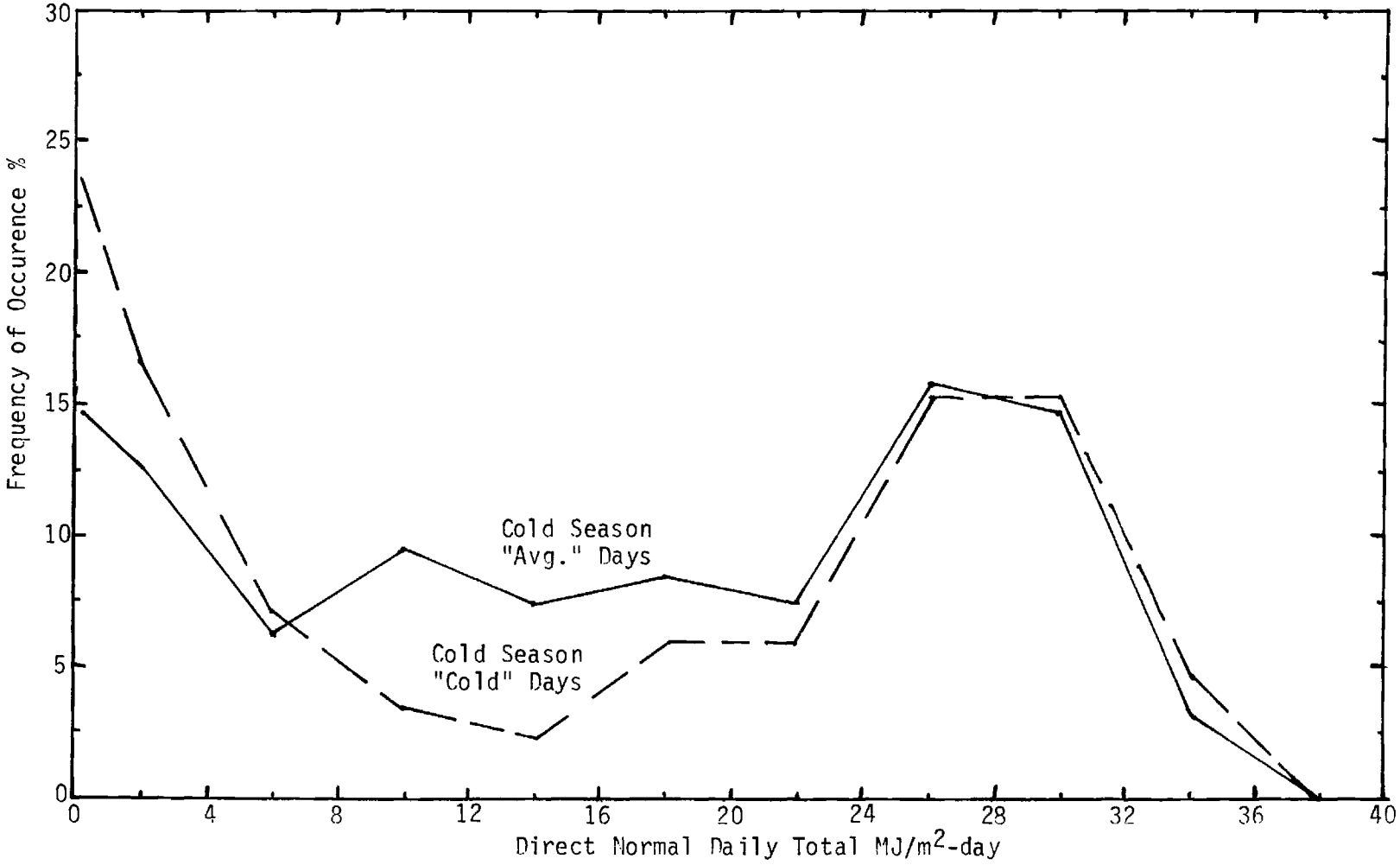

Figure 32. Comparison of Direct Normal Radiation Probability Distribution for Cold Season (October 2979 - March 1980) "Cold" Days ($\bar{T}<10^{o}C$) versus "Average" Days ($\bar{T}\geq 10^{o}C$)

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APPENDIX A

Introduction

This appendix presents solar radiation data on an hourly and daily basis as measured at the Southeast (Region 3) Solar Energy Meteorological Research and Training Site. Questions regarding these data may be addressed to Dr. C.G. Justus, School of Geophysical Scineces, Georgia Institute of Technology, Atlanta, Georgia 30332.

The solar radiation and meteorological instruments are located on the roof of the five-story Civil Engineering Building on the Georgia Tech campus. This site is about 3km (2 miles) from the heart of downtown Atlanta. Because of the height of the building site, however, there is only minimal horizon interference. See Figures 5 and 6 in the main report, for a complete description of the solar obstructions at the site. The Civil Engineering Building is at a sea level elevation of 292.0m. The solar instruments are at an elevation above ground of 34.8m, or a sea level elevation of 326.8m. The station is located at $33^{o}46'37"$N latitude and $84^{o}23'54"$W longitude.

Instrumentation and Operation

Table 1 in the main report gives a complete list of all of the instrumentation operated at the site. Careful site maintenance schedules are conducted which include cleaning of the instrument domes or glass covers, check of pyranometer desiccant and level, check of pyrheliometer tracking, and output and consistency checks. Calibrations of pyrheliometers are maintained by direct comparison against a self calibrating TMI active cavity radiometer, which measures on the Absolute Scale, and has participated in two active cavity radiometer national intercomparisons. Calibrations of pyranometers are maintained by comparison against a secondary standard calibrated at least yearly at the NOAA Boulder Calibration Lab, and by sun-shade tests using the TMI active cavity radiometer at Georgia Tech.

After data are measured as one minute averages, they are subjected to an array of automatic quality control checks and then summed into hourly values which are given further manual and automatic checks. The direct, global, and diffuse instruments each have redundant instruments which serve as quality control checks and tests of the basic instrument accuracy. Accuracy of the hourly totals ranges from about 1% for high readings ($\sim$3000KJ/m^2) to about 10% for low readings ($\sim$300KJ/m^2) and is on the order of 30KJ/m^2 or less absolute. Details of basic instrument accuracy are described in the main body of the report.

Data Description

Table A-1 gives a summary of monthly average solar radiation and meteorological parameters measured at the Atlanta, Georgia Tech site and at the nearby Atlanta airport (distance about 13km, 8 miles). For the Atlanta, Georgia Tech site data, temperature and dewpoint are averaged from the one-minute continuous data measurements; wind speed is the arithmetic average, while wind direction is the vector resultant; rainfall is based on hourly accumulations in the weighing rain gage; available sunshine is determined by integrating the period when the direct beam pyrheliometer measurement exceeds 200W/m^2; and all solar radiation values are integrated from the one minute average continuous data measurements.

All data given in the following tables are also available from the National Climatic Center in Research Cooperator Format. The following descriptions of procedures for handling missing data and for calculating daily and monthly totals apply only to the tabulated data given in this Appendix. No modeled or estimated values have been inserted on the Research Cooperator Data Format tape data.

Missing and Estimated Data: Hourly data values which are unavailable (no data recorded during the hour) are identified as 9999 and flagged with an asterisk (*). Data which are judged incorrect, or which have fewer than 54

TABLE 5

Monthly Averages of Solar Radiation and Meteorological Data

Lat.33°46'N Lon.84°24'W Atlanta Georgia Tech	1979									1980		
	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
Temperature, °C	16.7	20.6	23.4	25.2	26.1	21.6	16.6	12.8	8.4	7.4	5.5	11.1
Heating Deg.(C) Days	62	12	0	0	0	5	71	169	310	339	371	225
Cooling Deg.(C) Days	14	84	153	216	236	111	25	3	0	0	1	2
Dewpoint (°C)	5.9	11.0	13.0	17.2	17.2	14.5	8.9	4.9	1.4	1.9	-3.8	2.9
Wind Speed (m/s)	3.8	3.2	3.0	3.1	2.4	3.5	3.3	3.3	3.7	3.7	3.8	4.8
Wind Direction (deg.)	356	164	20	245	310	51	236	286	307	321	299	343
Precipitation (cm)	25.54	7.56	1.89	8.56	12.27	13.45	6.78	13.57	1.83	18.12	8.89	31.83
Direct Normal (MJ/m^2-day)	16.1	12.7	14.8	10.6	13.5	8.1	20.4	15.7	13.8	7.4	16.2	13.2
Direct RG630 (MJ/m^2-day)	10.1	8.0	8.9	7.3	9.8	5.8	14.0	10.9	9.4	4.9	11.0	8.8
Global Horiz. (MJ/m^2-day)	18.0	18.3	21.2	17.4	19.1	12.3	14.7	9.9	8.2	6.1	12.3	13.1
Global RG630 (MJ/m^2-day)	10.5	10.9	12.7	9.9	11.1	7.0	8.7	5.8	4.9	3.5	7.4	8.2
Diffuse Horiz. (MJ/m^2-day)	6.1	9.2	11.0	9.9	10.2	7.3	4.0	3.2	2.9	3.2	4.1	5.3
Lat. Tilt Global (MJ/m^2-day)	18.1	16.7	18.5	15.5	18.5	12.9	19.7	15.1	13.5	8.8	16.9	15.2
Infrared Incoming (MJ/m^2-day)	–	–	–	–	–	–	–	27.9	26.5	27.8	25.9	–
Ultraviolet (MJ/m^2-day)	0.94	0.97	1.11	0.92	0.94	0.65	0.71	0.48	0.41	0.33	0.59	0.65
Available Sunshine (%)	50	39	47	34	53	29	62	56	51	26	54	40
Extraterrestrial Horiz. (MJ/m^2-day)	36.2	40.0	41.4	40.7	37.7	32.6	26.1	30.5	17.7	19.0	23.9	30.5
Lat.33°39'N Lon.84°25'W Atlanta Airport												
Temperature (°C)	17.1	21.2	24.3	26.0	26.7	22.6	16.9	12.4	8.2	7.2	5.5	11.2
Heating Deg.(C) Days	54	9	0	0	0	3	68	178	311	342	371	222
Cooling Deg.(C) Days	18	101	182	242	264	135	27	3	0	0	2	2
Dewpoint (°C)	8.3	14.4	16.1	20.6	20.0	18.3	10.6	6.1	0.0	2.8	-2.8	3.9
Wind Speed (m/s)	4.5	3.8	3.9	4.1	3.6	4.9	4.1	4.4	4.7	4.8	4.7	5.6
Wind Direction (deg.)	310	220	10	170	340	70	250	280	320	340	310	350
Precipitation (cm)	30.12	6.17	3.71	9.19	18.49	15.44	5.51	13.18	1.75	14.45	6.83	29.62
Available Sunshine (%)	57	53	66	51	68	42	74	62	59	35	66	52
Sky Cover (10ths) (sunrise-to-sunset)	6.3	6.8	6.1	7.7	5.3	7.3	4.1	5.1	5.9	8.1	5.7	7.5

valid minute values are also flagged with an asterisk; the value is retained in the table but is not used in the totals or averages. For isolated (single) missing hourly values, an estimated hourly value is interpolated linearly between preceeding and subsequent valid hourly values and labeled with a dollar sign($). For redundant instruments (direct, global, diffuse, and available sunshine) if an hourly value is missing for the primary instrument but available from the secondary instrument, the secondary value is substituted. Hourly values labelled with a percent sign(%) were judged to be questionable by the quality control procedures, but are retained in the sums for purposes of daily or monthly averages.

Daily Totals: Daily totals are given in the right hand column, along with the number of values in the total. If the daily total contains 24 good (or interpolated) hourly values, it is not flagged. If the daily total contains 22 good (or interpolated) values, an estimated daily total is derived based on a normalization, discussed below, and flagged with a dollar sign. If less than 22 good values occur during a day, the daily total is flagged with an asterisk and the value is set to 99999.

Monthly Averages: Monthly averages by hour are also tabulated, at the bottom of each table, along with the number of valid points in this average. If the monthly average by hour contains fewer data than the number of days in the month, it is flagged with a dollar sign. A monthly average daily total, along with the number of valid (or interpolated) hours in this total is given at the lower right of each table. A consistency check is applied to the monthly average daily total to insure that the average over the days is within 3% of the sum over the monthly average hourly values. If this test is violated, values of the alternate average are given as a footnote in the table.

Normalized Data: If a daily value contins 22 hourly radiation values, a normalized daily total is computed by the following procedure.

$$\text{Normalized Daily Total} = \left[\frac{\Sigma(\text{available hourly values})}{\Sigma(\text{same hours of monthly average hourly values})}\right] \times (\text{Monthly Average Daily Total})$$

where the Monthly Average Daily Total is evaluated as the total of the Monthly Average Hourly Values. See note above on the 3% consistency check applied to the Monthly Average Daily Total computed by summing the daily total values.

Conversion Factors

Temperature	$^{o}F = 32 + 1.8^{o}C$
Degree Days (base $18.3^{o}C=65^{o}F$)	$^{o}F = 1.8^{o}C$ degree Days
Wind Speed	1mph = 0.447m/s
Wind Direction	$360^{o} = 0^{o}$ = Wind from North
	90^{o} = Wind from East
	180^{o} = Wind from South
	270^{o} = Wind from West
Precipitation	1 inch = 2.54cm
Solar Radiation	1 BTU/ft^2 = $11.4KJ/m^2$
	1 Langby = $41.8KJ/m^2$
	1 $KWhr/m^2$ = $3.6MJ/m^2$ = $3600KJ/m^2$

TABLE A-1

ATLANTA (GA TECH) YEAR 1979 MONTH 4

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	20	1125	2296	1682	2134	1504	966	396	213	899	1036	839	70	0	0	0	0	0	12981.	24
2	0	0	0	0	0	0	2	5	4	10	18	10	2	2	2	2	2	2	2	0	0	0	0	0	61.	24
3	0	0	0	0	0	0	2	3	3	3	3	3	3	6	3	278	44	3	3	0	0	0	0	0	354.	24
4	0	0	0	0	0	0	2	2	2	2	2	3	3	50	1649	1764	2329	1372	432	0	0	0	0	0	7613.	24
5	0	0	0	0	0	0	190	1364	2233	2907	3206	3337	3362	3292M	3238M	3067	2636	2091	947	0	0	0	0	0	32461.	$22
6	0	0	0	0	0	0	366	1888	2619	2980	3174	3241	3246	3223	3140	2949	2645	2035	860	0	0	0	0	0	32365.	24
7	0	0	0	0	0	0	530%	2120	2687	2886	2984	3074	3043	2975	2930	2752	2464	1774	627	0	0	0	0	0	30847.	24
8	0	0	0	0	0	0	2	94	18	2	4	2	2	2	2	2	2	2	2	0	0	0	0	0	138.	24
9	0	0	0	0	0	0	12	1527	1453	1884	1784	1332M	1342M	1992M	1893M	2166M	1040M	16	2	0	0	0	0	0	99999.	M18
10	0	0	0	0	0	0	302	1594	2599	2884	3079M	3149M	3240	3076	2904	2475	1878	421	211$	0	0	0	0	0	26536.	$22
11	0	0	0	0	0	0	2	2	2	2	2	2	3	2	18	869%	209	12	2	0	0	0	0	0	1148.	24
12	0	0	0	0	0	0	1	2	2	2	2	2	14	8$	2	2	28	2	2	0	0	0	0	0	44.	24
13	0	0	0	0	0	0	2	2	2	2	2%	2	2	2M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.	M17
14	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	962M	2569	1407	19	0	0	0	0	99999.	M13
15	0	0	0	0	0	0	829	2270	2817	3079	3242	3334	3352	3339	3245	3167	3068	2618	1428	25	0	0	0	0	35812.	24
16	0	0	0	0	0	0	871	2529	3028	3114M	3357M	3315	3207	3171	3138	3029	2726	2138	994	3	0	0	0	0	33751.	$22
17	0	0	0	0	0	0	440	1739	2399	2725	2891	2982	2951	2884	2786	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.	M19
18	0	0	0	0	0	0	9999M	2237M	2555	2835	2891	2261	1992	2136	1234$	331	308	565	94	0	0	0	0	0	18493.	$22
19	0	0	0	0	0	0	766	1797	1817	1561$	1306	2169	1903	2518	1772	1109	734	550	474	2	0	0	0	0	18477.	24
20	0	0	0	0	0	0	166	1859	1946	2782	2817	2889	2915	2919	2684	2299	1428	1023	483	1	0	0	0	0	26211.	24
21	0	0	0	0	0	0	451	1566	1785	1915	2827	2618	1486	2235	2342	1901	1504	870	207	1	0	0	0	0	21705.	24
22	0	0	0	0	0	0	6	21	183	162	314	668	105	19	58	13	3	3	3	1	0	0	0	0	1559.	24
23	0	0	0	0	0	0	3	49	484	481	865	1392	1263	1662M	9999M	9999M	9999M	9999M	2M	1	0	0	0	0	99999.	M18
24	0	0	0	0	0	0	2	2	2	3	4	9	128	1043	942	38	2	2	2	1	0	0	0	0	2181.	24
25	0	0	0	0	0	0	2	2	2	2	2	2M	9999M	9999M	9999M	2	2	2	2	1	0	0	0	0	99999.	M20
26	0	0	0	0	0	0	1	1	1	1	1	2	14M	22M	32M	20M	31M	3M	1	1	0	0	0	0	99999.	M18
27	0	0	0	0	0	0	2	2	4M	12M	15M	9999M	1M	6M	2686M	2696	2231	621	15	5	0	0	0	0	99999.	M17
28	0	0	0	0	0	0	554	1552	1285	2192	2822	3045	3329	3328	3200	2941	2612	2044	930	17	0	0	0	0	29852.	24
29	0	0	0	0	0	6	48	899	136	2	8	2415	3327	3062	3216	2100	818	1017	283	12	0	0	0	0	17349.	24
30	0	0	0	0	0	3	546	1406	2054$	2702	2213	3053	3098	3065	2936	2864	2575	1947	842	2	0	0	0	0	29305.	24
AV	0	0	0	0	0	0	219$	908$	1229$	1322$	1358$	1653$	1718$	1794$	1746$	1557$	1303$	944$	382$	3$	0	0	0	0	16138.$	
HR	30	30	30	30	30	30	28	28	28	27	28	25	25	22	22	24	24	26	27	28	30	30	30	30		680

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

GT 3% ERROR IN MONTHLY AVG:
DAILY AVG =17076.

TABLE A-2

ATLANTA (GA TECH) YEAR 1979 MONTH 4

DIRECT (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	19	636%	1449	1011	1252	876	858	229	127	447	727	635	56	0	0	0	0	0	8029.	24
2	0	0	0	0	0	0	2	4	4	6	11	4	3	3	3	3	3	3	3	0	0	0	0	0	51.	24
3	0	0	0	0	0	0	3	5	5	5	5	5	5	5	4	158	24	5	5	0	0	0	0	0	233.	24
4	0	0	0	0	0	0	3	4	4	4	4	4	4	32	1024	1114	1511	950	301	0	0	0	0	0	4962.	24
5	0	0	0	0	0	0	107	699*	1102*	1532*	1900	2064	2087	2061*	2059*	1997	1819	1556	769	0	0	0	0	0	99999.	*19
6	0	0	0	0	0	0	330	1336	1688	1842	1925	1956	1969	1959	1927	1854	1727	1440	675	0	0	0	0	0	20629.	24
7	0	0	0	0	0	0	440	1488	1741	1808	1856	1901	1890	1864	1851	1777	1645	1281	515	0	0	0	0	0	20057.	24
8	0	0	0	0	0	0	3	6$	10	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	56.	24
9	0	0	0	0	0	0	8	931%	924	1186	1091	813	832	1237*	1176*	1376	695$	13	4	0	0	0	0	0	9929.	$22
10	0	0	0	0	0	0	135	934$	1732	1860	1955*	2708*	1987	1896	1818	1591	1259	321	161$	0	0	0	0	0	16683.	$22
11	0	0	0	0	0	0	3	3	3	3	3	3	3	4	7	81$	155	11	3	0	0	0	0	0	284.	24
12	0	0	0	0	0	0	3	3	3	3	3	3	3	3$	3	4	4$	4	4	0	0	0	0	0	43.	24
13	0	0	0	0	0	0	3	4	4	4	3	4	4	4*	9999*	9999*	9999*	9999*	9999*	9999*	0	0	0	0	99999.	*17
14	0	0	0	0	0	0	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	124*	1804	1050	15	0	0	0	0	99999.	*13
15	0	0	0	0	0	0	714	1645	1876	1976	2028	2074	2079	2074	2032	2014	2014	1804	1147	25	0	0	0	0	23500.	24
16	0	0	0	0	0	0	724	1811	2005	1997*	2103*	2169*	367*	4*	187*	2002*	1807	1542	842	5	0	0	0	0	99999.	*17
17	0	0	0	0	0	0	363	1253	1595	1746	1819	1829$	1839	1805	1761	9999*	9999*	9999*	9999*	9999*	0	0	0	0	99999.	*19
18	0	0	0	0	0	0	9999*	1545*	1700	1822	1823	1403	1225	1324	767$	209	201	382	65	1	0	0	0	0	11657.	$22
19	0	0	0	0	0	0	651	1317	1219	1016$	814	1349	1179	1572	1117	718	495	409	408	3	0	0	0	0	12266.	24
20	0	0	0	0	0	0	140	1381	1286	1800	1792	1853	1856	1850	1722	1497	968	748	404	1	0	0	0	0	17279.	24
21	0	0	0	0	0	0	387	1117	1181	1202	1749	1810	914	1396	1471	1195	975	602	175	1	0	0	0	0	13955.	24
22	0	0	0	0	0	0	6	13	107	95	175	371	58	14	39	12	5	5	4	1	0	0	0	0	907.	24
23	0	0	0	0	0	0	4	36	315	297	406	858	777	1037*	9999*	9999*	9999*	9999*	4*	1	0	0	0	0	99999.	*18
24	0	0	0	0	0	0	4	4	4	4	4	6	67	574	515	23	4	4	4	1	0	0	0	0	1218.	24
25	0	0	0	0	0	0	4	4	4	4	4	4*	9999*	9999*	9999*	4	4	4	4	1	0	0	0	0	99999.	*20
26	0	0	0	0	0	0	4	4	4	4	4	4	6*	5*	5*	4*	4*	4*	4	1	0	0	0	0	99999.	*18
27	0	0	0	0	0	0	4	4	4*	7*	4*	9999*	1*	6*	1699*	1725	1485	426	15	5	0	0	0	0	99999.	*17
28	0	0	0	0	0	0	488	1142	889	1428	1770	1878	2037	2038	1971	1840	1679	1396	720	17	0	0	0	0	19270.	24
29	0	0	0	0	0	5	40	606	84	3	6	1449	2011	1856	1965	1291	512	671	202	10	0	0	0	0	10713.	24
30	0	0	0	0	0	3	441	979	1344$	1709	1377	1883	1897	1876	1821	1798	1666	1338	653	3	0	0	0	0	18785.	24
AV	0	0	0	0	0	0	179$	617$	784$	801$	840$	988$	1011$	1066$	1045$	947$	855$	688$	304$	3$	0	0	0	0	10087.$	
HR	30	30	30	30	30	30	28	27	27	26	26	25	25	21	21	24	28	26	27	28	30	30	30	30		666

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-3

ATLANTA (GA TECH) YEAR 1979 MONTH 4

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	33	552	1309	1808	2613	2454	2260	1865	1414	1709	1411	770	136	0	0	0	0	0	18358.	24
2	0	0	0	0	0	0	48	269	478	546	514	484	381	448	524	404	400	90	18	0	0	0	0	0	4603.	24
3	0	0	0	0	0	0	6	44	120	187	344	365	420	1029	897	1383	790	318	54	0	0	0	0	0	5958.	24
4	0	0	0	0	0	0	8	66	188	302	345	598	855	1064	2390	1867	1857	784	150	0	0	0	0	0	10273.	24
5	0	0	0	0	0	0	65	609	1456	2182	2806	3271	3455	3439#	2948#	2485	1725	909	218	0	0	0	0	0	25734.	$22
6	0	0	0	0	0	0	84	659	1452	2186	2784	3208	3369	3300	2962	2420	1703	882	209	0	0	0	0	0	25219.	24
7	0	0	0	0	0	0	94	686	1440	2130	2689	3117	3279	3201	2868	2320	1638	807	172	0	0	0	0	0	24440.	24
8	0	0	0	0	0	0	44	473	467	641	979	304	458	410	591	472	134	63	8	0	0	0	0	0	5041.	24
9	0	0	0	0	0	0	50	714	1174	2006	2467	2570	2618	3105#	2464#	2208	1294$	380	93	0	0	0	0	0	20895.	$22
10	0	0	0	0	0	0	109	727	1548	2260	2866	3248	3415	3376	2967	2274	1541	570	285$	0	0	0	0	0	25189.	24
11	0	0	0	0	0	0	27	163	369	551	874	815	1034	1038	1259	1848	812	286	45	0	0	0	0	0	9121.	24
12	0	0	0	0	0	0	18	114	260	281	82	210	556	453$	351	300	209$	117	9	0	0	0	0	0	2960.	24
13	0	0	0	0	0	0	6	180	273	224	51	70	140	75#	9999#	9999#	8999#	9999#	8999#	9999#	0	0	0	0	99999.	#17
14	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9899#	9999#	9999#	9999#	9999#	9999#	9999#	1008	279	2	0	0	0	0	99999.	#13
15	0	0	0	0	0	0	145	787	1584	2302	2905	3316	3480	3399	3075	2531	1887	1052	291	2	0	0	0	0	26755.	24
16	0	0	0	0	0	0	154	852	1666	2247#	3067#	3356	3475	3399	3037	2451	1763	961	257	2	0	0	0	0	26130.	$22
17	0	0	0	0	0	0	144	762	1539	2264	2860	3257	3401	3305	3001	9998#	9999#	9999#	8999#	8999#	0	0	0	0	99999.	#19
18	0	0	0	0	0	0	9999#	1155#	1554	2241	2814	2918	3054	3012	2143$	1274	1141	828	200	1	0	0	0	0	21932.	$22
19	0	0	0	0	0	0	209	859	1495	1960$	2424	3177	3025	3237	2469	1657	1124	670	232	3	0	0	0	0	22539.	24
20	0	0	0	0	0	0	103	886	1462	2218	2745	3103	3264	3216	2849	2253	1424	818	261	2	0	0	0	0	24604.	24
21	0	0	0	0	0	0	159	778	1516	2002	2859	3075	2570	2947	2729	2178	1590	742	205	2	0	0	0	0	23354.	24
22	0	0	0	0	0	0	123	578	1189	1475	1795	2521	1890	1403	1523	1020	773	430	138	2	0	0	0	0	14860.	24
23	0	0	0	0	0	0	95	474	1258	1871	2249	2784	2809	2660#	9999#	9999#	9999#	8999#	57#	1	0	0	0	0	99999.	#18
24	0	0	0	0	0	0	109	415	760	962	1345	2022	1961	2517	2219	977	704	363	93	1	0	0	0	0	14447.	24
25	0	0	0	0	0	0	26	118	177	317	465	730#	9999#	9999#	9999#	253	201	120	27	1	0	0	0	0	99999.	#20
26	0	0	0	0	0	0	27	89	120	153	203	753	1437	1451	1471	1491	1717	720	111	2	0	0	0	0	9744.	24
27	0	0	0	0	0	1	94	372	809	1831	2631	3336	3448	2777	2907	2493	1700	754	189	6	0	0	0	0	23347.	24
28	0	0	0	0	0	2	222	873	1520	2313	2987	3382	3802	3503	3167	2591	1878	1086	350	12	0	0	0	0	27486.	24
29	0	0	0	0	0	1	150	839	898	598	1231	3130	3552	3338	3076	2282	1348	930	280	7	0	0	0	0	21658.	24
30	0	0	0	0	0	3	218	800	1579$	2359	2580	3304	3428	3315	2983	2487	1812	1061	371	11	0	0	0	0	26308.	24
AV	0	0	0	0	0	0	92$	526$	1023$	1435$	1840$	2291	2373$	2376$	2203$	1755$	1245$	649$	173$	28	0	0	0	0	17982.	$
HR	30	30	30	30	30	30	28	28	29	28	28	28	28	24	24	28	28	27	27	28	30	30	30	30		678

FLAGS:
% - QUESTIONABLE HOURLY VALUE, (NCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-4

ATLANTA (GA TECH) YEAR 1979 MONTH 4

GLOBAL (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	17	348	803	1077	1543	1424	1303	1077	807	1000	830	455	71	0	0	0	0	0	10756.	24
2	0	0	0	0	0	0	30	157	268	294	267	242	183	220	263	201	210	39	5	0	0	0	0	0	2380.	24
3	0	0	0	0	0	0	2	10	50	81	166	170	208	573	504	828	471	184	30	0	0	0	0	0	3278.	24
4	0	0	0	0	0	0	2	20	86	148	168	299	444	584	1407	1087	985	462	75	0	0	0	0	0	5765.	24
5	0	0	0	0	0	0	47	409	933	1373	1762	2000	2101	2071M	1819M	1530	1075	582	139	0	0	0	0	0	15974.	$22
6	0	0	0	0	0	0	61	434	921	1360	1718	1936	2029	1987	1786	1463	1036	551	127	0	0	0	0	0	15389.	24
7	0	0	0	0	0	0	65	453	909	1325	1665	1899	1982	1924	1742	1415	1001	499	97	0	0	0	0	0	14975.	24
8	0	0	0	0	0	0	29	297	276	365	552	152	224	198	304	247	66	27	4	0	0	0	0	0	2741.	24
9	0	0	0	0	0	0	37	468	719	1220	1489	1545	1564	1871M	1470M	1333	782$	231	58	0	0	0	0	0	12624.	$22
10	0	0	0	0	0	0	77	479	989	1424	1773	2002	2083	2039	1806	1386	945	334	167$	0	0	0	0	0	15505.	24
11	0	0	0	0	0	0	22	96	209	302	483	440	568	568	718	1096	463	160	21	0	0	0	0	0	5144.	24
12	0	0	0	0	0	0	13	65	140	146	35	85	274	226$	179	156	111$	66	8	0	0	0	0	0	1504.	24
13	0	0	0	0	0	0	3	91	139	102	5	23	50	20M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.	M17
14	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	4M	1	0	0	0	0	99999.	M11
15	0	0	0	0	0	0	3	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	588M	177	1	0	0	0	0	99999.	M13
16	0	0	0	0	0	0	93	341M	9999M	1M	9999M	2017M	2083M	2015M	1840	1495	1066	590	148	1	0	0	0	0	99999.	M17
17	0	0	0	0	0	0	88	486	964	1402	1744	1917$	2089	2031	1859M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.	M18
18	0	0	0	0	0	0	9999M	743M	989	1407	1746	1805	1880	1856	1311$	786	695	520	118	1	0	0	0	0	13574.	$22
19	0	0	0	0	0	0	143	567	942	1221$	1501	1969	1869	2011	1530	1018	694	420	136	1	0	0	0	0	14019.	24
20	0	0	0	0	0	0	58	583	924	1387	1707	1928	2014	1981	1749	1380	889	507	156	1	0	0	0	0	15245.	24
21	0	0	0	0	0	0	94	492	945	1232	1763	1871	1532	1787	1649	1312	965	438	114	1	0	0	0	0	14194.	24
22	0	0	0	0	0	0	71	350	719	874	1058	1504	1097	798	874	576	437	241	73	1	0	0	0	0	8673.	24
23	0	0	0	0	0	0	58	281	765	1120	1341	1659	1546	1578M	9999M	9999M	9999M	9999M	24M	1	0	0	0	0	99999.	M18
24	0	0	0	0	0	0	67	243	443	545	785	1159	1128	1465	1289	546	385	192	44	1	0	0	0	0	8272.	24
25	0	0	0	0	0	0	7	48	74	143	220	361M	9999M	9999M	9999M	111	90	50	8	1	0	0	0	0	99999.	M20
26	0	0	0	0	0	0	7	32	45	81	86	399	824	848	858	880	1024	421	52	1	0	0	0	0	5537.	24
27	0	0	0	0	0	1	60	227	489	1122	1817	2058	2111	1691	1782	1541	1054	461	105	2	0	0	0	0	14320.	24
28	0	0	0	0	0	1	143	561	952	1438	1851	2091	2232	2165	1960	1613	1179	894	223	8	0	0	0	0	17107.	24
29	0	0	0	0	0	1	98	548	560	355	745	1944	2201	2059	1896	1406	824	578	165	3	0	0	0	0	13382.	24
30	0	0	0	0	0	2	142	514	992$	1470	1589	2036	2109	2037	1833	1628	1122	666	229	3	0	0	0	0	16272.	24
AV	0	0	0	0	0	0	55$	318$	802$	852$	1087$	1329$	1371$	1368$	1277$	1036$	735$	375$	98$	1$	0	0	0	0	10503.	$
HR	30	30	30	30	30	30	28	28	27	27	27	26	26	22	22	25	25	25	28	28	30	30	30	30		660

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-5

ATLANTA (GA TECH) YEAR 1979 MONTH 4

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	21	233	340	810	1018	1192	1389	1518	1227	1187	822	480	123	0	0	0	0	0	10380.	24
2	0	0	0	0	0	0	40	253	458	524	481	458	368	440	519	395	388	84	15	0	0	0	0	0	4425.	24
3	0	0	0	0	0	0	1	28	102	165	322	340	399	996	869	1163	746	311	47	0	0	0	0	0	5491.	24
4	0	0	0	0	0	0	1	38	166	285	330	577	835	1003	1052	678	463	322	87	0	0	0	0	0	5838.	24
5	0	0	0	0	0	0	31	224	392	352	374	392	404	446*	383*	371	336	236	83	0	0	0	0	0	4279.	$22
6	0	0	0	0	0	0	30	170	257	315	356	389	415	415	407	389	327	239	88	0	0	0	0	0	3796.	24
7	0	0	0	0	0	0	24	135	220	318	403	464	530	573	506	457	374	260	83	0	0	0	0	0	4348.	24
8	0	0	0	0	0	0	31	419	443	628	960	296	436	387	571	453	117	48	3	0	0	0	0	0	4791.	24
9	0	0	0	0	0	0	38	276	459	813	1061	1392	1366	1288*	915*	686	519$	352	71	0	0	0	0	0	9423.	$22
10	0	0	0	0	0	0	48	233%	301	373	414*	476*	451	611	590	585	530	424	212$	0	0	0	0	0	5427.	$22
11	0	0	0	0	0	0	17	145	350	531	650	793	1011	1018	1225	1169%	687	280	41	0	0	0	0	0	8116.	24
12	0	0	0	0	0	0	12	104	250	271	75	200	524	431$	339	291	199$	106	3	0	0	0	0	0	2806.	24
13	0	0	0	0	0	0	3	169	264	220	21	60	125	65*	9999*	9999*	9999*	9999*	9999*	9999*	0	0	0	0	99999.	*17
14	0	0	0	0	0	0	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	165	81	1	0	0	0	0	99999.	*13
15	0	0	0	0	0	0	36	138	205	264	312	344	354	355	369	305	242	181	90	1	0	0	0	0	3196.	24
16	0	0	0	0	0	0	36	127	182	226*	307*	390	496*	526*	9999*	360*	318	251	111	1	0	0	0	0	99999.	*18
17	0	0	0	0	0	0	67	248	375	493	593	649$	705	740	718	9999*	9999*	9999*	9999*	9999*	0	0	0	0	99999.	*19
18	0	0	0	0	0	0	9999*	295*	325	417	566	973	1266	1141	1095$	1050	986	861	180	1	0	0	0	0	9053.	$22
19	0	0	0	0	0	0	94	324	606	992$	1378	1286	1310	1041	1053	881	732	521	170	4	0	0	0	0	10391.	24
20	0	0	0	0	0	0	61	334	493	406	524	565	605	626	668	673	676	485	195	4	0	0	0	0	6314.	24
21	0	0	0	0	0	0	83*	308*	638*	767*	648*	804*	1222*	993*	1040*	1170*	1356*	375*	216*	3*	0	0	0	0	99999.	*10
22	0	0	0	0	0	0	110*	567*	1121*	1448*	1491*	2098*	1890*	1425*	1542*	1034*	783*	436*	139*	2*	0	0	0	0	99999.	*10
23	0	0	0	0	0	0	83*	459*	975*	1721*	1548*	1608*	1376*	1246*	9999*	9999*	9999*	9999*	54*	1*	0	0	0	0	99999.	*10
24	0	0	0	0	0	0	97*	402*	754*	962*	1355*	2045*	1651*	1556	1447	964	702	358	91	1	0	0	0	0	99999.	*17
25	0	0	0	0	0	0	17	115	175	310	456	722*	9999*	9999*	9999*	248	198	117	22	1	0	0	0	0	99999.	*20
26	0	0	0	0	0	0	18	80	111	145	195	736	1322	1322	1294%	1137*	1112*	194*	110	1	0	0	0	0	99999.	*21
27	0	0	0	0	0	0	78	355	699	1024*	1322*	284*	352*	1131*	671*	589	489	527	181	3	0	0	0	0	99999.	*18
28	0	0	0	0	0	0	119	363	865	799	689	642	500	475	499	507	450	354	191	8	0	0	0	0	6463.	24
29	0	0	0	0	0	0	108	534	800	570	1202	930	454	556	406	784	876	567	218	4	0	0	0	0	8012.	24
30	0	0	0	0	0	0	108	299	403$	507	771	562	557	541	543	466	406	359	219	10	0	0	0	0	5752.	24
AV	0	0	0	0	0	0	43$	223$	370$	457$	588$	820$	697$	787$	770$	650$	503$	320$	109$	2$	0	0	0	0	6137.	$
HR	30	30	30	30	30	30	24	24	25	23	22	22	22	20	20	22	23	24	25	25	30	30	30	30		621

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-6

ATLANTA (GA TECH) YEAR 1979 MONTH 4

LAT. TILTED KJ/M2

DAY \ HOUR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	27	535	1399	1950	2893	2650	2369	1872	1372	1756	1441	747	111	0	0	0	0	0	19122.	24
2	0	0	0	0	0	0	41	230	414	480	445	408	329	358	428	339	340	65	11	0	0	0	0	0	3888.	24
3	0	0	0	0	0	0	2	24	91	150	292	301	359	898	747	1320	863	233	35	0	0	0	0	0	5115.	24
4	0	0	0	0	0	0	2	40	155	256	296	512	732	961	2572	1987	1725	767	121	0	0	0	0	0	10127.	24
5	0	0	0	0	0	0	47	567	1503	2385	3157	3654	3866	3871M	3204M	2712	1805	889	188	0	0	0	0	0	28056.	$22
6	0	0	0	0	0	0	55	595	1478	2362	3108	3558	3753	3681	3284	2619	1762	853	161	0	0	0	0	0	27270.	24
7	0	0	0	0	0	0	58	609	1456	2287	2974	3467	3656	3563	3167	2512	1708	785	138	0	0	0	0	0	28378.	24
8	0	0	0	0	0	0	37	405	375	573	872	249	388	353	511	420	115	62	16	0	0	0	0	0	4375.	24
9	0	0	0	0	0	0	46	637	1138	2044	2551	2654	2722	3284M	2633M	2346	1345$	345	73	0	0	0	0	0	21496.	$22
10	0	0	0	0	0	0	73	643	1539	2359	3073	3581	3767	3646	3272	2417	1597	527	264$	0	0	0	0	0	26756.	24
11	0	0	0	0	0	0	23	138	315	472	751	720	910	907	1223	1892	738	286	34	0	0	0	0	0	8389.	24
12	0	0	0	0	0	0	14	95	216	237	70	190	489	406$	322	278	189$	100	5	0	0	0	0	0	2615.	24
13	0	0	0	0	0	0	6	184	265	213	25	61	122	66M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.	M17
14	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	1184M	894	175	1	0	0	0	0	99999.	M13
15	0	0	0	0	0	0	73	639	1509	2351	3066	3558	3742	3647	3258	2622	1858	930	179	1	0	0	0	0	27434.	24
16	0	0	0	0	0	0	78	681	1578	2277M	3232M	3559	3729	3472	2643	2577	1758	863	181	2	0	0	0	0	25884.	$22
17	0	0	0	0	0	0	98	637	1491	2329	3039	3455	3701	3595	3206	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.	M19
18	0	0	0	0	0	0	9999M	1031M	1505	2322	2986	3143	3292	3223	2289$	1351	1106	751	186	2	0	0	0	0	22800.	$22
19	0	0	0	0	0	0	132	721	1445	1949$	2454	3350	3237	3419	2557	1718	1095	804	177	2	0	0	0	0	22856.	24
20	0	0	0	0	0	0	84	690	1397	2249	2850	3305	3511	3477	3033	2324	1403	728	194	2	0	0	0	0	25247.	24
21	0	0	0	0	0	0	104	650	1423	2012	2954	3230	2705	3138	2841	2211	1549	661	156	2	0	0	0	0	23638.	24
22	0	0	0	0	0	0	98	506	1088	1347	1766	2604	1818	1283	1386	901	676	377	121	1	0	0	0	0	13971.	24
23	0	0	0	0	0	0	87	421	1154	1742	2181	2851	2677	2750M	9999M	9999M	9999M	9999M	44M	1	0	0	0	0	99999.	M18
24	0	0	0	0	0	0	94	367	667	853	1190	1892	1880	2508	2203	902	618	308	77	1	0	0	0	0	13558.	24
25	0	0	0	0	0	0	14	89	141	267	404	845M	9999M	9999M	9999M	212	169	96	16	1	0	0	0	0	99999.	M20
26	0	0	0	0	0	0	20	71	97	127	171	652	1359	1347	1406	1418	1583	618	88	1	0	0	0	0	8959.	24
27	0	0	0	0	0	1	86	332	743%	1767	2659	3457	3603	2878	2991	2497	1587	617	146	4	0	0	0	0	23367.	24
28	0	0	0	0	0	1	138	675	1394	2278	3035	3511	3765	3643	3236	2564	1743	876	215	8	0	0	0	0	27084.	24
29	0	0	0	0	0	1	132	681	826	549	1126	3244	3738	3476	3146	2313	1251	794	210	4	0	0	0	0	21490.	24
30	0	0	0	0	0	2	132	618	1449$	2281	2615	3421	3568	3437	3032	2447	1674	853	236	9	0	0	0	0	25773.	24
AV	0	0	0	0	0	0	84$	445$	974$	1435$	1893$	2401$	2492$	2468$	2255$	1794$	1211$	578$	129$	1$	0	0	0	0	18142.	$
HR	30	30	30	30	30	30	28	28	29	28	28	28	28	24	24	28	29	27	27	28	30	30	30	30		679

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-7

ATLANTA (GA TECH) YEAR 1979 MONTH 4

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	2	26	65	99	144	141	133	113	85	91	70	36	7	0	0	0	0	0	1011.	24
2	0	0	0	0	0	0	2	14	28	35	34	34	28	33	39	28	26	5	1	0	0	0	0	0	307.	24
3	0	0	0	0	0	0	0	1	7	13	28	28	32	71	60	81	46	18	2	0	0	0	0	0	385.	24
4	0	0	0	0	0	0	0	2	12	22	27	43	60	72	139	105	78	37	9	0	0	0	0	0	607.	24
5	0	0	0	0	0	0	2	26	68	112	149	177	168	165%	149%	123	79	39	9	0	0	0	0	0	1312.	$22
6	0	0	0	0	0	0	2	28	67	110	149	173	181	175	154	119	77	37	9	0	0	0	0	0	1281.	24
7	0	0	0	0	0	0	3	29	68	107	137	160	189	164	142	109	72	35	8	0	0	0	0	0	1203.	24
8	0	0	0	0	0	0	2	22	28	40	61	23	35	31	43	34	9	3	0	0	0	0	0	0	332.	24
9	0	0	0	0	0	0	2	29	62	106	137	145	154	173%	143%	120	70$	20	4	0	0	0	0	0	1149.	$22
10	0	0	0	0	0	0	3	31	73	113	149	174	181	176	150	112	73	31	16$	0	0	0	0	0	1282.	24
11	0	0	0	0	0	0	1	10	23	37	58	56	69	69	73	99	46	15	2	0	0	0	0	0	559.	24
12	0	0	0	0	0	0	1	6	17	19	5	16	41	33$	26	21	14$	6	0	0	0	0	0	0	205.	24
13	0	0	0	0	0	0	0	10	17	15	1	4	10	5%	9999%	9999%	9999%	9999%	9999%	9999%	0	0	0	0	99999.	%17
14	0	0	0	0	0	0	9999%	9999%	9999%	9999%	9999%	9999%	9999%	9999%	9999%	9999%	9999%	9999%	42	11	0	0	0	0	99999.	%13
15	0	0	0	0	0	0	5	34	74	114	150	175	182	176	154	122	85	44	12	0	0	0	0	0	1326.	24
16	0	0	0	0	0	0	5	35	76	111%	160%	177	183	176	154	121	80	41	11	0	0	0	0	0	1300.	$22
17	0	0	0	0	0	0	5	32	70	111	145	166	176	169	146	9999%	9999%	9999%	9999%	9999%	0	0	0	0	99999.	%19
18	0	0	0	0	0	0	9999%	51%	72	106	140	151	158	154	113$	73	59	36	9	0	0	0	0	0	1104.	$22
19	0	0	0	0	0	0	6	36	69	97$	124	160	155	160	120	83	53	28	9	0	0	0	0	0	1089.	24
20	0	0	0	0	0	0	6	34	67	104	132	145	156	154	132	101	63	35	11	0	0	0	0	0	1138.	24
21	0	0	0	0	0	0	6	33	69	98	138	151	136	147	132	104	72	38	10	0	0	0	0	0	1134.	24
22	0	0	0	0	0	0	5	29	62	82	103	138	111	85	89	60	45	24	7	0	0	0	0	0	839.	24
23	0	0	0	0	0	0	4	26	63	97	117	150	142	141%	9999%	9999%	9999%	9999%	2%	0	0	0	0	0	99999.	%18
24	0	0	0	0	0	0	5	24	44	60	84	120	117	139	122	60	43	21	5	0	0	0	0	0	843.	24
25	0	0	0	0	0	0	1	7	12	23	34	53%	9999%	9999%	9999%	18	14	8	1	0	0	0	0	0	99999.	%20
26	0	0	0	0	0	0	0	3	7	11	15	52	90	90	98	83	88	38	7	0	0	0	0	0	571.	24
27	0	0	0	0	0	0	4	20	46	101	144	181	188	155	153	124	81	39	11	0	0	0	0	0	1246.	24
28	0	0	0	0	0	0	9	39	74	120	159	183	194	187	164	127	85	45	14	0	0	0	0	0	1401.	24
29	0	0	0	0	0	0	7	39	48	38	75	171	189	176	156	115	89	43	13	0	0	0	0	0	1142.	24
30	0	0	0	0	0	0	9	37	77$	116	135	171	179	166	146	118	80	43	14	0	0	0	0	0	1294.	24
AV	0	0	0	0	0	0	4$	24$	51$	75$	99$	124$	130$	128$	116$	90$	61$	30$	8$	0$	0	0	0	0	938.$	
HR	30	30	30	30	30	30	28	28	29	28	28	28	28	24	24	28	29	27	27	28	30	30	30	30		879

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-8

ATLANTA (GA TECH) YEAR 1979 MONTH 4

AVAILABLE SUNSHINE %

DAY \ HOUR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	0	0	82	100	70	97	86	52	25	8	49	83	63	0	0	0	0	0	0	66.	24
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	1.	24
4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	83	71	92	65	18	0	0	0	0	0	25.	24
5	0	0	0	0	0	0	9	100	98	100	100	100	100	100	100	100	100	100	70	0	0	0	0	0	93.	24
6	0	0	0	0	0	0	47	100	100	100	100	100	100	100	100	100	100	100	62	0	0	0	0	0	96.	24
7	0	0	0	0	0	0	62	100	100	100	100	100	100	100	100	100	100	98	47	0	0	0	0	0	96.	24
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
9	0	0	0	0	0	0	0	92	82	83	86	100	100	100	100	100	70	0	0	0	0	0	0	0	68.	24
10	0	0	0	0	0	0	22	100	100	100	100	100	100	100	100	93	82	27	0	0	0	0	0	0	80.	24
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	20	0	0	0	0	0	0	0	5.	24
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
14	0	0	0	0	0	0	0	70	100	100	100	100	100	100	100	100	100	100	83	0	0	0	0	0	89.	24
15	0	0	0	0	0	0	71	100	100	100	100	100	100	100	100	100	100	100	87	0	0	0	0	0	98.	24
16	0	0	0	0	0	0	62	100	100	100	100	100	100	100	100	98	100	100	68	0	0	0	0	0	95.	24
17	0	0	0	0	0	0	38	100	100	100	100	100	100	100	100	100	100	70	0	0	0	0	0	0	94.	24
18	0	0	0	0	0	0	86	90	100	100	100	100	100	100	90	5	7	30	2	0	0	0	0	0	66.	24
19	0	0	0	0	0	0	59	100	100	100	78	100	100	100	63	52	42	38	22	0	0	0	0	0	73.	24
20	0	0	0	0	0	0	9	100	90	100	100	100	100	100	100	100	100	93	33	0	0	0	0	0	86.	24
21	0	0	0	0	0	0	33	98	90	88	100	95	72	95	95	82	88	53	0	0	0	0	0	0	78.	24
22	0	0	0	0	0	0	0	0	5	7	17	35	0	0	0	0	0	0	0	0	0	0	0	0	5.	24
23	0	0	0	0	0	0	0	0	27	22	42	83	68	70	20	0	0	0	0	0	0	0	0	0	34.	24
24	0	0	0	0	0	0	0	0	0	0	0	0	12	57	58	2	0	0	0	0	0	0	0	0	10.	24
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
26	0	0	0	0	0	0	0	0	0	0	0	0	20	30	30	50	100	20	0	0	0	0	0	0	8.	24
27	0	0	0	0	0	0	0	0	10	90	100	100	100	100	100	100	100	38	0	0	0	0	0	0	27.	24
28	0	0	0	0	0	0	37	100	82	93	100	100	100	100	100	100	100	100	85	0	0	0	0	0	88.	24
29	0	0	0	0	0	0	0	58	0	0	0	88	100	100	100	100	50	88	12	0	0	0	0	0	52.	24
30	0	0	0	0	0	0	22	78	100	100	90	100	100	100	100	100	100	100	85	0	0	0	0	0	88.	24
AV	0	0	0	0	0	0	21	51	50	51	50	59	58	60	63	59	57	48	24	0	0	0	0	0	50.	
HR	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		720

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-9

ATLANTA (GA TECH) YEAR 1979 MONTH 5

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	3	903	2095	2651	2911	3048	3180	3188	3022	3012	2484	1127	111	34	1	0	0	0	0	27752.	24
2	0	0	0	0	0	1	34	1274	1444	1586	2252	961	2713	2484	2656	2146	892	298	25	1	0	0	0	0	18747.	24
3	0	0	0	0	0	1	2	4	177	1118	702	4	4	111	1954	1453	679	380	6	1	0	0	0	0	6596.	24
4	0	0	0	0	0	1	2	55	3	155	252	1143	1271	1220	168	75	2	2	2	1	0	0	0	0	4354.	24
5	0	0	0	0	0	1	2	116	9	7	540	940	547	455	410	1482	690	1541	279	2	0	0	0	0	7021.	24
6	0	0	0	0	0	1	2	2	2	2	2	3	2	92	1624	1865	2019	1139	660	28	0	0	0	0	7445.	24
7	0	0	0	0	0	1	2	2	2	2	13	181	471	434	829	595	276	111	2	1	0	0	0	0	2923.	24
8	0	0	0	0	0	1	2	2	2	2	2	2	4	20	381	943	1328	470	2	1	0	0	0	0	3162.	24
9	0	0	0	0	0	1	2	2	2	2	2	91	476	15	35	3	10	875	283	23	0	0	0	0	1823.	24
10	0	0	0	0	0	1	2	2	2	2	475	1265	853	434	596	577	1356	945	386	23	0	0	0	0	6919.	24
11	0	0	0	0	0	1	3	149	396	760	501	42	1467	2117	2176	416	6	187	2	1	0	0	0	0	8204.	24
12	0	0	0	0	0	1	96	1733	2611	2585	2533	1927	2210	1850	1019	330	172	2	2	1	0	0	0	0	17072.	24
13	0	0	0	0	0	1	13	868	413	9	83	320	154	5	2	3	2	2	2	1	0	0	0	0	1879.	24
14	0	0	0	0	0	1	1355	2531	2969	3189	3276	3282	3289	3198	3065	2912	2595	2177	1337	113	0	0	0	0	35289.	24
15	0	0	0	0	0	60	1196	2157	2580	2768	2894	2934	3053	3114	3085	2959	2679	1827	608	94	0	0	0	0	31995.	24
16	0	0	0	0	0	57	1116	2093	2583	2845	2987	2122	2280	1980	993	2508	2360	1693	346	23	0	0	0	0	25986.	24
17	0	0	0	0	0	10	849	1800	2370	2750	2963	3075	3017	2703	2228	2105	2137	1447	549	71	0	0	0	0	28073.	24
18	0	0	0	0	0	41	237	1787	2311	2767	3038	3075	3012	2960	2720$	2480	2000	1292	876	59	0	0	0	0	28655.	24
19	0	0	0	0	0	27	462	869	1523	1876	2130	1953	1109	1780	2027	1990	386	156	32	45	0	0	0	0	16365.	24
20	0	0	0	0	0	3	46	2	2	204	1522	2157	1820	1449	433	1345N	1N	2N	2N	1	0	0	0	0	99999.N	20
21	0	0	0	0	0	1	2	92	268	2164	1993	872	121	1504	1103	166	19	41	17	1	0	0	0	0	8364.	24
22	0	0	0	0	0	0N	36N	790	1808	2324	1806	929	1253	1735	819	830	237	179	151	38	0	0	0	0	13045.$	22
23	0	0	0	0	0	1	2	2	2	2	4	31	7	5	2	2	2	2	9	1	0	0	0	0	77.	24
24	0	0	0	0	0	1	2	28	151	483	1290	1943	1771	1082	55	516	88	775	380	1	0	0	0	0	8567.	24
25	0	0	0	0	0	73	1168	2109	1885	1743	1074	865	155	557	320	473	260	1540	1327	117	0	0	0	0	13666.	24
26	0	0	0	0	0	135	1564	2602	3057	3280	3418	3485	3473	3405	2852	3267	3035	1610	91	32	0	0	0	0	35225.	24
27	0	0	0	0	0	1	2	111	235	22	47	2	11	2	8	132	2	2	2	2	0	0	0	0	582.	24
28	0	0	0	0	0	76	429	874	162	280	823	857	909	973	1241	1132	1422	1454	835	6	0	0	0	0	11073.	24
29	0	0	0	0	0	1	2	12	2	2	2	2	8	378	135	68	759	1278	5	47	0	0	0	0	2701.	24
30	0	0	0	0	0	1	40	335	149	52	171	258	841	550	1559	491	37	2	2	1	0	0	0	0	4489.	24
31	0	0	0	0	0	1	2	2	2	2	2	2	2	208%	583N	9999N	9999N	9999N	9999N	9999N	0	0	0	0	88999.N	18
AV	0	0	0	0	0	16$	31$	79$	96$	115$	127$	122$	127$	128$	125$	118$	88$	91$	74$	27$	2$	0	0	0	12691.$	
HR	31	31	31	31	31	30	30	31	31	31	31	31	31	31	30	29	28	29	29	30	31	31	31	31		732

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
N - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-10

ATLANTA (GA TECH) YEAR 1979 MONTH 5

DIRECT (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	4	711	1432	1698	1818	1874	1932	1925	1847	1852	1547	717	76	31	1	0	0	0	0	17464.	24
2	0	0	0	0	0	1	30	876	941	981	1398	588	1686	1559	1642	1353	607	216	25	1	0	0	0	0	11905.	24
3	0	0	0	0	0	1	3	4	105	677	417	4	5	82	1180	879	422	249	7	1	0	0	0	0	4038.	24
4	0	0	0	0	0	1	3	37	4	93	149	869	732	725	102	46	4	4	3	1	0	0	0	0	2573.	24
5	0	0	0	0	0	1	4	77	7	5	312	547	326	271	244	912	477	1104	238	3	0	0	0	0	4526.	24
6	0	0	0	0	0	1	4	4	4	4	3	3	3	54	972	1149	1332	839	536	24	0	0	0	0	4933.	24
7	0	0	0	0	0	1	3	3	3	3	8	105	268	253	496	359	169	71	3	1	0	0	0	0	1748.	24
8	0	0	0	0	0	1	3	3	3	3	3	3	4	12	209	540	771	256	3	1	0	0	0	0	1817.	24
9	0	0	0	0	0	1	3	3	3	3	3	48	253	10	21	4	7	437%	134	12	0	0	0	0	942.	24
10	0	0	0	0	0	1	3	3	3	3	280	744	510	264	379	348	741	470%	312	24	0	0	0	0	4085.	24
11	0	0	0	0	0	1	4	100	242	458	305	30	864	1258	1323	260	9	124	3	1	0	0	0	0	4982.	24
12	0	0	0	0	0	1	76	1062	1515	1484	1443	1112	1295	1085	608	218	109	3	3	2	0	0	0	0	10015.	24
13	0	0	0	0	0	1	10	564	253	6	45	180	98	7	15	13	3	3	3	2	0	0	0	0	1204.	24
14	0	0	0	0	0	1	966	1636	1830	1924	1957	1954	1948	1897	1926	1739	1581	1400	962	95	0	0	0	0	21717.	24
15	0	0	0	0	0	44	878	1396	1603	1702	1754	1774	1814	1825	1798	1733	1618	1224	452	73	0	0	0	0	19688.	24
16	0	0	0	0	0	50	846	1399	1623	1746	1815	1303	1407	1218	820	1583	1509	1169	272	23	0	0	0	0	16805.	24
17	0	0	0	0	0	10	682	1278	1559	1723	1818	1867	1844	1659	1366	1324	1400	1013	457	69	0	0	0	0	18088.	24
18	0	0	0	0	0	38	190	1275	1543	1745	1853	1874	1846	1828	1714$	1600	1361	957	742	59	0	0	0	0	18626.	24
19	0	0	0	0	0	25	409	716	1133	1302	1421	1307	704	1116	1246	1199	238	104	26	35	0	0	0	0	10984.	24
20	0	0	0	0	0	3	37	3	3	129	930	1310	1134	955	302	923#	1#	3#	3#	2	0	0	0	0	99999.#	20
21	0	0	0	0	0	1	4	87	186	1371	1250	550	75	921	707	112	14	32	14	2	0	0	0	0	5286.	24
22	0	0	0	0	0	0#	31#	607	1203	1467	997	581	773	1116	549	565	169	143	124	35	0	0	0	0	8599.$	22
23	0	0	0	0	0	1	3	3	3	3	3	17	4	4	3	3	3	3	7	2	0	0	0	0	63.	24
24	0	0	0	0	0	2	3	17	82	274	752	1170	1096	872	42	348	67	576	282	2	0	0	0	0	5385.	24
25	0	0	0	0	0	55	836	1336	1136	1017	815	494	89	320	176	275	158	941	763%	68	0	0	0	0	8262.	24
26	0	0	0	0	0	95	1070	1663	1866	1956	2010	1981	2012	1970	1651	1923	1799	905	49	17	0	0	0	0	20966.	24
27	0	0	0	0	0	2	3	68	140	10	18	3	6	3	5	77	3	3	3	2	0	0	0	0	349.	24
28	0	0	0	0	0	51	297	584	105	188	416	545	594	622	802	748	945	1050	521	7	0	0	0	0	7476.	24
29	0	0	0	0	0	2	3	12	3	3	3	4	4	220	79	44	508	907	5	39	0	0	0	0	1835.	24
30	0	0	0	0	0	2	35	259	103	39	107	164	523	340	975	311	25	3	3	2	0	0	0	0	2891.	24
31	0	0	0	0	0	2	3	3	3	3	3	4	3	12#	245#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.#	17
AV	0	0	0	0	0	13$	237$	532	809	714	773	736	789	804$	764$	731$	578$	493$	206$	20$	0	0	0	0	7984.$	
HR	31	31	31	31	31	30	30	31	31	31	31	31	31	30	30	29	29	29	29	30	31	31	31	31		731

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-11

ATLANTA (GA TECH) YEAR 1979 MONTH 5

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	4	261	939	1692	2356	2916	3332	3450	3352	3039	2362	1398	616	220	5	0	0	0	0	25941.	24
2	0	0	0	0	0	3	169	857	1507	2169	2950	2539	3508	3173	2970	2364	1278	614	214	11	0	0	0	0	24327.	24
3	0	0	0	0	0	2	62	396	1205	2016	2305	773	599	1715	2818	2172	1285	584	153	1	0	0	0	0	16188.	24
4	0	0	0	0	0	1	110	543	702	1381	1571	2598	2750	2428	1158	538	152	249	55	3	0	0	0	0	14241.	24
5	0	0	0	0	0	2	67	514	600	983	1844	2272	1838	1859	1580	2107	1205	1063	229	4	0	0	0	0	16165.	24
6	0	0	0	0	0	3	70	187	383	533	675	893	1045	1456	2692	2251	1785	880	320	15	0	0	0	0	13187.	24
7	0	0	0	0	0	2	70	221	247	800	872	1311	2123	1977	2277	1604	913	614	223	11	0	0	0	0	13064.	24
8	0	0	0	0	0	2	48	234	388	568	649	745	551	1158	1459	1620	1498	667	137	13	0	0	0	0	9736.	24
9	0	0	0	0	0	1	58	130	210	431	497	1736	2032	1393	1226	656	706	841	272	19	0	0	0	0	10208.	24
10	0	0	0	0	0	1	38	176	307	800	1474	2486	2204	1563	1514	1211	1506	964	308	15	0	0	0	0	14565.	24
11	0	0	0	0	0	2	108	642	1172	1906	1689	876	2572	3182	2981	1071	647	722	154	8	0	0	0	0	17731.	24
12	0	0	0	0	0	4	118	936	1755	2426	2796	2823	3180	3066	2177	673	982	461	155	4	0	0	0	0	21537.	24
13	0	0	0	0	0	15	153	875	1131	938	1498	2259	1788	454	268	638	391	300	35	11	0	0	0	0	10751.	24
14	0	0	0	0	0	5	382	1133	1900	2592	3140	3475	3614	3489	3149	2606	1908	1162	447	30	0	0	0	0	29030.	24
15	0	0	0	0	0	16	363	1062	1777	2420	2939	3279	3481	3411	3100	2582	1911	1058	309	22	0	0	0	0	27708.	24
16	0	0	0	0	0	20	352	1024	1755	2437	3056	3040	3310	2921	1816	2652	1884	1147	309	16	0	0	0	0	25739.	24
17	0	0	0	0	0	16	348	1015	1747	2465	3015	3390	3493	3248	2793	2218	1789	983	299	26	0	0	0	0	26845.	24
18	0	0	0	0	0	15	279	1019	1737	2423	2987	3345	3457	3344	2898$	2452	1748	980	407	28	0	0	0	0	27119.	24
19	0	0	0	0	0	17	327	885	1597	2302	2876	3104	2346	2749	2764	2386	1027	507	198	13	0	0	0	0	23060.	24
20	0	0	0	0	0	19	174	70	330	1341	2591	3172	3003	2720	1567	2241	1504	947	304	27	0	0	0	0	20012.	24
21	0	0	0	0	0	8	248	625	955	2340	2704	2571	1573	2901	2201	943	305	290	135	12	0	0	0	0	17810.	24
22	0	0	0	0	0	0%	265%	831	1662	2380	2652	2839	2867	3043	1967	1881	818	616	275	56	0	0	0	0	21927.$	22
23	0	0	0	0	0	4	75	165	359	529	779	1291	1358	803	209	515	471	301	176	30	0	0	0	0	7055.	24
24	0	0	0	0	0	6	96	354	962	1439	2207	2999	2971	2222	880	1834	909	1037	358	41	0	0	0	0	18112.	24
25	0	0	0	0	0	27	407	1121	1751	2214	2015	2021	1164	1875	1331	1571	1021	1095	505	44	0	0	0	0	18162.	24
26	0	0	0	0	0	30	451	1197	1969	2668	3237	3589	3721	3582	3080	2771	2091	1087	287	32	0	0	0	0	29768.	24
27	0	0	0	0	0	7	192	569	754	1027	1767	885	838	570	978	1114	177	133	38	6	0	0	0	0	9050.	24
28	0	0	0	0	0	35	348	869	999	1196	2257	2177	2574	2413	2234	1862	1875	1149	450	20	0	0	0	0	20258.	24
29	0	0	0	0	0	2	14	323	119	138	198	544	908	2172	1299	1187	1469	1175	269	55	0	0	0	0	9873.	24
30	0	0	0	0	0	12	283	876	1175	1329	1755	1760	2498	2170	2659	1490	804	240	146	2	0	0	0	0	17198.	24
31	0	0	0	0	0	12	82	404	466	400	344	91	261	1849	2444#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.#	18
AV	0	0	0	0	0	10$	192$	851	1075	1572	2008	2193	2292	2331	2038$	1712$	1174$	753$	248$	19$	0	0	0	0	18264.$	
HR	31	31	31	31	31	30	30	31	31	31	31	31	31	31	30	30	30	30	30	30	31	31	31	31		736

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-12

ATLANTA (GA TECH) YEAR 1979 MONTH 8

GLOBAL (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	2	171	605	1064	1478	1805	2033	2105	2040	1851	1442	844	363	125	2	0	0	0	0	15930.	24
2	0	0	0	0	0	2	100	535	927	1305	1752	1514	2112	1908	1767	1409	739	354	118	5	0	0	0	0	14547.	24
3	0	0	0	0	0	2	38	228	709	1198	1360	418	306	983	1669	1281	750	399	81	2	0	0	0	0	9418.	24
4	0	0	0	0	0	1	60	317	399	798	897	1510	1596	1404	845	290	78	129	22	2	0	0	0	0	8148.	24
5	0	0	0	0	0	1	33	293	335	563	1108	1358	1084	1087	920	1289	733	859	122	2	0	0	0	0	9563.	24
6	0	0	0	0	0	2	40	109	221	306	384	508	597	855	1631	1353	1093	530	182	5	0	0	0	0	7816.	24
7	0	0	0	0	0	2	44	127	134	333	494	759	1248	1146	1348	929	516	351	123	5	0	0	0	0	7555.	24
8	0	0	0	0	0	2	25	122	190	288	331	381	282	640	821	934	871	373	58	9	0	0	0	0	5326.	24
9	0	0	0	0	0	1	30	64	102	222	251	982	1164	787	687	361	395	482	141	8	0	0	0	0	5667.	24
10	0	0	0	0	0	1	19	98	170	461	872	1493	1322	909	896	685	927	654	181	6	0	0	0	0	8695.	24
11	0	0	0	0	0	1	59	385	897	1155	989	483	1533	1937	1798	617	359	421	76	3	0	0	0	0	10512.	24
12	0	0	0	0	0	2	47	569	1064	1459	1675	1870	1889	1822	1257	386%	558	254	81	2	0	0	0	0	12735.	24
13	0	0	0	0	0	8	77	544	664	538	872	1321	1028	227	123	333	207	164	17	7	0	0	0	0	6128.	24
14	0	0	0	0	0	2	248	726	1185	1599	1915	2101	2176	2097	1900	1579	1158	718	274	14	0	0	0	0	17692.	24
15	0	0	0	0	0	9	233	871	1111	1501	1807	2007	2096	2051	1861	1555	1151	643	167	8	0	0	0	0	16869.	24
16	0	0	0	0	0	8	219	643	1086	1498	1871	1858	2031	1786	1058%	1650	1161	732	172	6	0	0	0	0	15760.	24
17	0	0	0	0	0	9	222	646	1087	1504	1838	2056	2118	1966	1704	1336	1096	801	161	8	0	0	0	0	18349.	24
18	0	0	0	0	0	8	174	854	1092	1518	1862	2062	2124	2074	1807$	1540	1107	826	254	10	0	0	0	0	16911.	24
19	0	0	0	0	0	9	211	553	1003	1419	1757	1908	1388	1869	1889	1424	599	280	112	7	0	0	0	0	14007.	24
20	0	0	0	0	0	10	91	37	165	786	1561	1903	1795	1661	909	1380	910	576	168	10	0	0	0	0	11941.	24
21	0	0	0	0	0	2	140	374	558	1432	1608	1522	899	1718	1292	513	156	153	57	5	0	0	0	0	10426.	24
22	0	0	0	0	0	0%	142%	524	1026	1461	1595	1579	1694	1814	1158	1128	473	364	152	31	0	0	0	0	13143.$	22
23	0	0	0	0	0	2	32	78	175	270	414	702	742	422	85	256	238	148	91	13	0	0	0	0	3665.	24
24	0	0	0	0	0	2	40	181	546	858	1315	1797	1791	1325	493	967	541	670	240	24	0	0	0	0	10790.	24
25	0	0	0	0	0	16	264	719	1106	1391	1230	1212	684	1120	788	938	812	692	327	21	0	0	0	0	11120.	24
26	0	0	0	0	0	16	295	774	1247	1670	2004	2198	2276	2187	1872	1891	1284	664	160	14	0	0	0	0	18350.	24
27	0	0	0	0	0	4	113	342	448	595	1031	488	459	294	562	648	85	63	8	3	0	0	0	0	5142.	24
28	0	0	0	0	0	24	222	538	585	713	1388	1276	1538	1438	1302	1099	993	898	274	5	0	0	0	0	12069.	24
29	0	0	0	0	0	2	8	169	46	52	84	268	498	1284	755	688	887	738	147	31	0	0	0	0	5654.	24
30	0	0	0	0	0	5	166	542	695	784	1013	1018	1487	1266	1558	852	447	121	71	3	0	0	0	0	10005.	24
31	0	0	0	0	0	5	38	218	247	183	144	22	108	1019	1383N	9999N	9999N	9999N	9999N	9999N	0	0	0	0	99999.N	18
AV	0	0	0	0	0	5$	115$	389	648	946	1200	1303	1359	1384	1208$	1017$	899$	454$	139$	9$	0	0	0	0	10885.$	
HR	31	31	31	31	31	30	30	31	31	31	31	31	31	31	30	30	30	30	30	30	31	31	31	31		738

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
N - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-13

ATLANTA (GA TECH) YEAR 1979 MONTH 5

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	99	230	310	377	436	485	520	622	556	615	770	582	221	5	0	0	0	0	5829.	24
2	0	0	0	0	0	1	144	397	753	1071	1094	1659	967	918	746	822	785	489	212	11	0	0	0	0	10069.	24
3	0	0	0	0	0	1	49	384	1092	1249	1727	783	594	1571	1130	1093	905	541	181	1	0	0	0	0	11280.	24
4	0	0	0	0	0	1	102	513	697	1268	1361	1558	1543	1334	1038	502	158	255	52	2	0	0	0	0	10384.	24
5	0	0	0	0	0	1	57	464	584	966	1371	1426	1324	1445	1237	1041	857	499	178	4	0	0	0	0	11457.	24
6	0	0	0	0	0	1	50	170	368	520	666	886	1042	1375	1349	913	873	479	211	17	0	0	0	0	8720.	24
7	0	0	0	0	0	1	58	210	238	597	865	1155	1680	1584	1597	1202	769	581	227	11	0	0	0	0	10773.	24
8	0	0	0	0	0	1	40	228	386	570	651	741	543	1140	1149	937	710	478	142	13	0	0	0	0	7732.	24
9	0	0	0	0	0	1	47	117	200	425	491	1643	1692	1394	1212	667	708	463	216	19	0	0	0	0	9294.	24
10	0	0	0	0	0	1	33	173	307	808	1070	1323	1410	1189	1045	838	718	583	264	23	0	0	0	0	9785.	24
11	0	0	0	0	0	1	105	583	957	1351	1289	853	1193	1263	1170	790	667	674	189	10	0	0	0	0	11076.	24
12	0	0	0	0	0	2	93	291	357	625	713	1074	1125	1398	1361	454	884	470	158	5	0	0	0	0	9010.	24
13	0	0	0	0	0	12	143	590X	928	937	1433	1977	1671	470	278	640	386	294	26	8	0	0	0	0	9791.	24
14	0	0	0	0	0	1	110	214	271	326	390	445	478	521	564	703M	9999M	9999M	251M	30	0	0	0	0	99999.M	20
15	0	0	0	0	0	7	139	275	388	461	532	607	574	535	481	427	390	365	190	19	0	0	0	0	5370.	24
16	0	0	0	0	0	7	142	258	342	422	565	1114	1164	1098	990	845	554	517	243	18	0	0	0	0	8277.	24
17	0	0	0	0	0	9	179	352	451	507	538	567	637	767	929	679	592	425	218	26	0	0	0	0	6877.	24
18	0	0	0	0	0	8	210	353	470	475	474	531	610	621	641$	661	631	506	246	27	0	0	0	0	6482.	24
19	0	0	0	0	0	10	269	573	774	980	1109	1339	1315	1127	1058	916	825	456	199	10	0	0	0	0	10957.	24
20	0	0	0	0	0	12	156	67	330	1167	1258	1140	1249	1374	1236	1169M	575M	685M	270X	30	0	0	0	0	99999.M	21
21	0	0	0	0	0	4	231	573	785	774	1012	1780	1482	1490	1250	824	307	277	120	9	0	0	0	0	10920.	24
22	0	0	0	0	0	0M	248M	542	650	700	1292	1792	1677	1417	1278	1291	695	568	251	58	0	0	0	0	12383.$	22
23	0	0	0	0	0	2	63	156	353	526	778	1258	1357	803	209	516	471	299	169	26	0	0	0	0	6985.	24
24	0	0	0	0	0	3	92	339	876	1087	1082	1147	1253	1209	640	1246	866	749	265	38	0	0	0	0	11092.	24
25	0	0	0	0	0	12	213M	506M	711	968	1086	1190	1002	1333	1046	1192	641	462	208	22	0	0	0	0	10637.$	22
26	0	0	0	0	0	13	218M	375M	272	296	327	377	350	352	590	319	295	402	260	25	0	0	0	0	4096.$	22
27	0	0	0	0	0	1	174	527	624	1003	1723	887	828	565	968	1007	174	126	29	3	0	0	0	0	8643.	24
28	0	0	0	0	0	26	301	542	910	981	1742	1345	1729	1518	1159	1055	829	567	332	23	0	0	0	0	13058.	24
29	0	0	0	0	0	1	14	316	116	138	197	539	898	1816	1172	1153	1009	650	284	54	0	0	0	0	8356.	24
30	0	0	0	0	0	8	284	751	1082	1314	1609	1532	1692	1664	1308	1117	798	252	153	2	0	0	0	0	13544.	24
31	0	0	0	0	0	9	74	401	466	401	339	95	262	1586	1820M	9999M	9999M	9999M	9999M	8999M	0	0	0	0	99999.M	18
AV	0	0	0	0	0	5$	123$	365$	549	751	943	1073	1092	1145	986$	849$	652$	465$	196$	18$	0	0	0	0	8212.$	
HR	31	31	31	31	31	30	28	28	31	31	31	31	31	31	30	28	28	28	28	30	31	31	31	31		725

FLAGS:
X - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-14

ATLANTA (GA TECH) YEAR 1979 MONTH 5

LAT. TILTED KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	2	129	682	1508	2278	2942	3430	3571	3447	3074	2324	1314	534	189	3	0	0	0	0	25427.	24
2	0	0	0	0	0	2	137	671	1349	2104	2961	2456	3579	3249	3000	2275	1171	537	175	8	0	0	0	0	23672.	24
3	0	0	0	0	0	2	51	351	1074	1839	2180	690	517	1587	2777	2022	1107	595	123	1	0	0	0	0	14917.	24
4	0	0	0	0	0	1	91	462	613	1239	1495	2567	2788	2408	1116	497	120	220	41	2	0	0	0	0	13637.	24
5	0	0	0	0	0	1	42	423	526	889	1760	2280	1745	1786	1480	1985	1091	850	170	3	0	0	0	0	15012.	24
6	0	0	0	0	0	1	55	161	336	475	593	792	911	1345	2651	2172	1613	700	200	11	0	0	0	0	12016.	24
7	0	0	0	0	0	2	60	195	214	527	769	1225	2022	1857	2182	1478	830	538	179	7	0	0	0	0	12086.	24
8	0	0	0	0	0	2	38	201	329	488	551	620	476	1002	1347	1496	1343	537	115	12	0	0	0	0	8556.	24
9	0	0	0	0	0	1	41	102	175	382	424	1623	1948	1274	1107	578	628	656	177	12	0	0	0	0	9109.	24
10	0	0	0	0	0	1	31	155	267	703	1390	2390	2138	1519	1464	1139	1360	752	220	12	0	0	0	0	13541.	24
11	0	0	0	0	0	1	90	525	1033	1780	1810	887	2616	3194	2925	985	540	590	122	5	0	0	0	0	16883.	24
12	0	0	0	0	0	3	90	666	1470	2210	2707	2781	3176	3042	2085	627	835	426	115	2	0	0	0	0	20236.	24
13	0	0	0	0	0	12	129	685	968	846	1352	2136	1640	401	243	575	343	254	25	7	0	0	0	0	9615.	24
14	0	0	0	0	0	4	148	742	1585	2377	3022	3423	3585	3445	3052	2417	1643	836	220	19	0	0	0	0	26518.	24
15	0	0	0	0	0	9	159	708	1465	2213	2816	3229	3443	3374	3002	2391	1840	772	190	13	0	0	0	0	25443.	24
16	0	0	0	0	0	9	154	673	1457	2220	2915	2950	3249	2853	1745	2455	1621	848	214	12	0	0	0	0	23378.	24
17	0	0	0	0	0	11	179	687	1461	2235	2871	3302	3412	3169	2665	2048	1534	732	183	15	0	0	0	0	24505.	24
18	0	0	0	0	0	9	199	692	1442	2201	2843	3228	3357	3247	2743$	2238	1489	758	242	19	0	0	0	0	24707.	24
19	0	0	0	0	0	11	208	644	1352	2089	2742	3023	2260	2686	2653	2181	874	433	185	9	0	0	0	0	21349.	24
20	0	0	0	0	0	14	142	81	273	1187	2403	3045	2918	2656	1501	2033	1303	732	231	23	0	0	0	0	18522.	24
21	0	0	0	0	0	8	220	538	821	2100	2529	2404	1445	2806	2058	849	321	281	118	10	0	0	0	0	16509.	24
22	0	0	0	0	0	0*	221*	815	1362	2142	2498	2485	2730	2941	1852	1895	891	471	209	44	0	0	0	0	19885.$	22
23	0	0	0	0	0	3	59	140	303	459	893	1143	1195	688	185	439	394	251	136	19	0	0	0	0	6107.	24
24	0	0	0	0	0	3	78	298	820	1278	2050	2852	2875	2117	803	1465	797	790	256	34	0	0	0	0	16516.	24
25	0	0	0	0	0	15	172	708	1435	1971	1853	1881	1098	1704	1225	1407	918	786	237	23	0	0	0	0	15432.	24
26	0	0	0	0	0	14	154	728	1557	2348	3003	3392	3570	3423	2904	2487	1708	728	217	22	0	0	0	0	26252.	24
27	0	0	0	0	0	8	162	482	653	908	1598	783	796	509	924	998	172	113	28	4	0	0	0	0	8138.	24
28	0	0	0	0	0	25	236	640	881	1061	2052	1974	2415	2232	2044	1642	1410	832	283	15	0	0	0	0	17742.	24
29	0	0	0	0	0	2	11	262	101	106	171	479	824	2024	1137	1069	1217	847	215	43	0	0	0	0	8529.	24
30	0	0	0	0	0	10	235	697	1014	1187	1583	1811	2348	2007	2468	1345	729	220	136	2	0	0	0	0	15571.	24
31	0	0	0	0	0	10	70	354	418	348	307	78	242	1620	2190*	9999*	9999*	9999*	9999*	9999*	0	0	0	0	99999.*	18
AV	0	0	0	0	0	79	119$	483	912	1424	1892	2102	2222	2246	1947$	1876$	1025$	587$	172$	14$	0	0	0	0	18727.$	
HR	31	31	31	31	31	30	30	31	31	31	31	31	31	31	30	30	30	30	30	30	31	31	31	31		738

FLAGS:
* - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
\# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-15

ATLANTA (GA TECH) YEAR 1979 MONTH 5

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	10	40	77	112	142	169	176	168	148	111	68	31	10	0	0	0	0	0	1262.	24
2	0	0	0	0	0	0	6	38	71	107	148	136	184	166	151	116	69	34	11	0	0	0	0	0	1238.	24
3	0	0	0	0	0	0	2	23	68	105	122	51	41	103	146	110	87	34	8	0	0	0	0	0	878.	24
4	0	0	0	0	0	0	6	30	43	82	96	147	155	138	71	34	10	16	2	0	0	0	0	0	632.	24
5	0	0	0	0	0	0	2	30	40	63	105	131	106	111	94	102	58	46	13	1	0	0	0	0	903.	24
6	0	0	0	0	0	0	3	11	25	35	45	59	68	88	145	117	84	44	16	1	0	0	0	0	742.	24
7	0	0	0	0	0	0	2	12	16	41	55	79	121	115	122	91	54	34	13	0	0	0	0	0	756.	24
8	0	0	0	0	0	0	2	16	28	41	48	54	41	76	90	94	77	39	12	0	0	0	0	0	620.	24
9	0	0	0	0	0	0	2	8	14	31	36	110	122	88	77	43	46	46	16	1	0	0	0	0	640.	24
10	0	0	0	0	0	0	2	11	19	51	87	131	114	90	88	71	64	39$	14	1	0	0	0	0	775.	24
11	0	0	0	0	0	0	5	32	61	96	89	59	140	151	135	56	40	36	9	0	0	0	0	0	911.	24
12	0	0	0	0	0	0	12	46	88	123	148	154	169	157	120	37	54	28	7	0	0	0	0	0	1145.	24
13	0	0	0	0	0	0	11	46	64	58	90	133	105	32	20	44	25	18	1	0	0	0	0	0	645.	24
14	0	0	0	0	0	0	16	50	93	133	167	187	195	185	162	127	88	51	19	1	0	0	0	0	1476.	24
15	0	0	0	0	0	0	15	48	85	118	145	165	178	177	157	126	88	47	17	1	0	0	0	0	1370.	24
16	0	0	0	0	0	0	15	46	84	120	152	153	166	151	107	118	84	44	16	1	0	0	0	0	1256.	24
17	0	0	0	0	0	0	14	45	82	122	153	175	179	165	137	109	78	44	17	1	0	0	0	0	1322.	24
18	0	0	0	0	0	0	12	44	80	117	149	166	171	159	133$	107	69	39	18	1	0	0	0	0	1263.	24
19	0	0	0	0	0	0	13	39	76	114	144	153	130	139	140	118	57	33	11	1	0	0	0	0	1189.	24
20	0	0	0	0	0	0	11	4	21	76	141	172	160	135	89	107	72	43	16	2	0	0	0	0	1048.	24
21	0	0	0	0	0	1	12	32	58	117	142	136	83	153	118	58	22	18	11	1	0	0	0	0	970.	24
22	0	0	0	0	0	0%	14%	40	80	118	138	138	152	158	105	92	44	30	15	2	0	0	0	0	1124.	822
23	0	0	0	0	0	0	4	10	24	36	53	86	90	55	17	36	31	20	9	1	0	0	0	0	472.	24
24	0	0	0	0	0	0	5	24	60	83	125	165	160	123	59	93	48	44	13	2	0	0	0	0	1005.	24
25	0	0	0	0	0	1	17	50	88	113	115	123	74	115	82	94	60	51	21	2	0	0	0	0	1004.	24
26	0	0	0	0	0	1	18	53	96	137	172	194	204	194	165	141	100	53	17	1	0	0	0	0	1546.	24
27	0	0	0	0	0	0	10	31	43	65	108	61	58	42	64	66	12	9	2	0	0	0	0	0	572.	24
28	0	0	0	0	0	1	14	43	58	69	124	123	145	132	127	101	86	54	21	2	0	0	0	0	1102.	24
29	0	0	0	0	0	0	1	20	6	9	14	39	61	126	78	72	76	51	16	2	0	0	0	0	576.	24
30	0	0	0	0	0	1	14	39	62	78	103	103	137	120	140	85	49	18	9	0	0	0	0	0	955.	24
31	0	0	0	0	0	1	4	25	31	31	27	8	21	115	143#	9999#	9899#	9999#	8999#	9988#	0	0	0	0	99999.	#18
AV	.0	0	0	0	0	0$	8$	32	58	84	109	121	128	127	109$	88$	59$	38$	13$	1$	0	0	0	0	972.$	
HR	31	31	31	31	31	30	30	31	31	31	31	31	31	31	30	30	30	30	30	30	31	31	31	31		738

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-16

ATLANTA (GA TECH) YEAR 1979 MONTH 5

AVAILABLE SUNSHINE %

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	0	80	100	100	100	100	100	100	100	100	98	85	2	0	0	0	0	0	0	77.	24
2	0	0	0	0	0	0	0	83	87	93	100	57	100	92	100	87	50	18	0	0	0	0	0	0	65.	24
3	0	0	0	0	0	0	0	0	5	83	52	0	0	0	90	77	40	22	0	0	0	0	0	0	27.	24
4	0	0	0	0	0	0	0	0	0	7	12	53	64	52	7	5	0	0	0	0	0	0	0	0	14.	24
5	0	0	0	0	0	0	0	5	0	0	28	42	28	23	20	87	40	93	20	0	0	0	0	0	27.	24
6	0	0	0	0	0	0	0	0	0	0	0	0	0	5	85	82	100	77	42	0	0	0	0	0	27.	24
7	0	0	0	0	0	0	0	0	0	0	0	12	37	23	88	47	15	8	0	0	0	0	0	0	15.	24
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	47	85	28	0	0	0	0	0	0	12.	24
9	0	0	0	0	0	0	0	0	0	0	0	2	17	0	0	0	0	47	13	0	0	0	0	0	8.	24
10	0	0	0	0	0	0	0	0	0	0	22	58	43	23	28	30	70	88	7	0	0	0	0	0	27.	24
11	0	0	0	0	0	0	0	3	27	42	28	0	83	88	88	18	0	0	0	0	0	0	0	0	27.	24
12	0	0	0	0	0	0	0	80	100	87	98	75	88	88	50	15	7	0	0	0	0	0	0	0	51.	24
13	0	0	0	0	0	0	0	52	22	0	2	10	10	0	0	0	0	0	0	0	0	0	0	0	7.	24
14	0	0	0	0	0	0	77	100	100	100	100	100	100	100	100	100	100	100	95	0	0	0	0	0	93.	24
15	0	0	0	0	0	0	82	100	100	100	100	100	100	100	100	100	100	95	37	0	0	0	0	0	88.	24
16	0	0	0	0	0	0	80	100	100	100	100	82	87	78	38	97	100	100	30	0	0	0	0	0	79.	24
17	0	0	0	0	0	0	65	100	100	100	100	100	100	92	85	85	97	82	32	0	0	0	0	0	82.	24
18	0	0	0	0	0	0	12	100	100	100	100	100	100	100	100	98	100	87	70	0	0	0	0	0	84.	24
19	0	0	0	0	0	0	0	77	100	100	100	97	53	75	87	88	20	10	0	0	0	0	0	0	58.	24
20	0	0	0	0	0	0	0	0	0	8	75	93	85	73	27	100	90	80	10	0	0	0	0	0	31.	24
21	0	0	0	0	0	0	0	4	17	100	88	48	3	77	55	12	0	0	0	0	0	0	0	0	29.	24
22	0	0	0	0	0	0	0	69	100	100	100	58	88	83	43	48	13	0	0	0	0	0	0	0	51.	24
23	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
24	0	0	0	0	0	0	0	0	5	15	49	83	80	47	2	37	2	88	23	0	0	0	0	0	29.	24
25	0	0	0	0	0	0	83	100	85	78	47	40	10	23	13	27	12	73	97	0	0	0	0	0	49.	24
26	0	0	0	0	0	4	98	100	100	100	100	100	100	100	100	100	100	85	5	0	0	0	0	0	85.	24
27	0	0	0	0	0	0	0	7	12	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	2.	24
28	0	0	0	0	0	0	13	55	12	15	42	43	60	52	58	80	75	95	38	0	0	0	0	0	43.	24
29	0	0	0	0	0	0	0	0	0	0	0	0	0	20	5	2	48	80	0	0	0	0	0	0	11.	24
30	0	0	0	0	0	0	0	21	0	0	3	15	53	45	87	25	0	0	0	0	0	0	0	0	18.	24
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	50	30	0	0	0	0	0	0	0	1.	24
AV	0	0	0	0	0	0	16	40	41	46	50	47	50	50	51	50	41	43	17	0	0	0	0	0	39.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-17

ATLANTA (GA TECH) YEAR 1979 MONTH 6

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	177%N	776	2100	786	186	42	0	0	0	0	99999.%N	14
2	0	0	0	0	0	53	735	1449	1673	2226	2442	1297	1706	1134	913	583	450	426	168	3	0	0	0	0	15260.	24
3	0	0	0	0	0	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	0	0	0	0	99999.%N	9
4	0	0	0	0	0	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	0	0	0	0	99999.%N	9
5	0	0	0	0	0	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	9999%N	2608%N	2192	1042	492	18	2	0	0	0	0	99999.%N	14
6	0	0	0	0	0	1	2	2	2	2	2	2	7	7	4	439	26	367	249	66	0	0	0	0	1177.	24
7	0	0	0	0	0	1	2	17	349	1349	1660	516	836	1012	302	348	33	895	206	8	0	0	0	0	7535.	24
8	0	0	0	0	0	1	2	2	3	5	248	4	3	1301	1173	882	1163	558	187	2	0	0	0	0	5533.	24
9	0	0	0	0	0	1	2	89	114	850	447	40	6	130	369	112	545	810	838	189	0	0	0	0	4541.	24
10	0	0	0	0	0	56	878	1542	1850	2259	2349	2226	2040	1373	1197	1584	1606	1224	712	2	0	0	0	0	20898.	24
11	0	0	0	0	0	17	1526	2697	3133	3334	3425	3446	3474	3457	3406	3273	3107	2781	2108	631	0	0	0	0	39813.	24
12	0	0	0	0	0	186	1722	2591	2987	3162	3277	3347	3353	3055	2798$	2542	2368	2052	908	334	0	0	0	0	34682.	24
13	0	0	0	0	0	153	1423	2272	2698	2945	3057	3182	3183	2758	2448	2980	2755	2457	1774	423	0	0	0	0	34488.	24
14	0	0	0	0	0	81	1008	1746	1907	2293	2045	1545	1710	1457	1528	1350	2194	1919	1158	278	0	0	0	0	22219.	24
15	0	0	0	0	0	14	285	541	1359	1694	2158	808	141	208	89	1158	1776	1986	985	15	0	0	0	0	13217.	24
16	0	0	0	0	0	1	10	15	113	200	1178	1636	403	8	133	120	1888	1731	142	6	0	0	0	0	7583.	24
17	0	0	0	0	0	1	11	243	891	732	2060	1768	2208	1761	1978	1071	1751	1195	902	147	0	0	0	0	16718.	24
18	0	0	0	0	0	66	854	1547	2019	2263	2423	2574	2643	2468	2389	2358	2127	1714	1044	187	0	0	0	0	26655.	24
19	0	0	0	0	0	34	695	1382	1855	2065	2025	1296	1024	920	1237	1616	1299	1150	676	106	0	0	0	0	17380.	24
20	0	0	0	0	0	1	2	34	175	83	24	12	2	2	42	402	410	483	38	2	0	0	0	0	1711.	24
21	0	0	0	0	0	1	30	3	12	95	31	190	78	14	9	24	11	74	16	3	0	0	0	0	591.	24
22	0	0	0	0	0	1	2	151	835	1171	794	1331	1499	1780	1122	1102	1483	1317	912	199	0	0	0	0	13699.	24
23	0	0	0	0	0	23	780	1521	1770	2190	2449	1967	2002	1842	854	1092	872	1563	354	78	0	0	0	0	19137.	24
24	0	0	0	0	0	9	466	881	1336	196	54	8	72	474	951	369	235	826	363	80	0	0	0	0	6100.	24
25	0	0	0	0	0	1	2	2	2	2	2	2	2	3	5	29	2	2	2	2	0	0	0	0	60.	24
26	0	0	0	0	0	1	13	3	744	929	1816	1885	1609	2231	763	113	5	2	2	2	0	0	0	0	10119.	24
27	0	0	0	0	0	1	4	398	1449	2825	2891	2328	584	1613	1625	14	419	1812	1394	352	0	0	0	0	17689.	24
28	0	0	0	0	0	1	2	353	397	1575	1729	781	2143	2837	2353	1665	835	1171	848	152	0	0	0	0	16844.	24
29	0	0	0	0	0	38	713	1125	1691	1562	550	298	521	543	44	1271	275	211	2	5	0	0	0	0	8848.	24
30	0	0	0	0	0	1	2	294	1784	2328	2353	2563	2496	2078	1677	2234	1886	2242	1282	378	0	0	0	0	23376.	24
AV	0	0	0	0	0	29$	429$	803$	1197$	1474$	1596$	1347$	1297$	1318$	1131$	1132$	1159$	1144$	623$	131$	0	0	0	0	14812.$	
HR	30	30	30	30	30	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	30	30	30	30		870

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
N - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-18

ATLANTA (GA TECH) YEAR 1979 MONTH 6

DIRECT (RG830) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	122#	508	1456	615	120	30	0	0	0	0	99999.#	14
2	0	0	0	0	0	41	617	1118	1204	1515	1630	893	1214	847	720	497	400	400	169	4	0	0	0	0	11268.	24
3	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.#	9
4	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.#	9
5	0	0	0	0	0	8999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	1716#	1463	728	379	20	2	0	0	0	0	99999.#	14
6	0	0	0	0	0	2	3	3	3	3	3	3	3	5	4	283	20	308	232	83	0	0	0	0	938.	24
7	0	0	0	0	0	2	3	13	239	911	1116	337	534	638	194	228	23	848	171	7	0	0	0	0	5064.	24
8	0	0	0	0	0	2	3	3	3	5	158	4	3	798	721	566	793	426	162	2	0	0	0	0	3646.	24
9	0	0	0	0	0	2	3	60	64	516	262	22	4	69	201	70	360	579	595	132	0	0	0	0	2938.	24
10	0	0	0	0	0	59	871	1039	1185	1363	1389	1289	1176	815	749	1042	1121	911	558	2	0	0	0	0	13351.	24
11	0	0	0	0	0	27	1035	1629	1816	1886	1910	1902	1906	1888	1840	1780	1728	1623	1361	480	0	0	0	0	22808.	24
12	0	0	0	0	0	113	1058	1546	1873	1721	1752	1778	1773	1619	1503%	1388	1360	1302	662	285	0	0	0	0	19534.	24
13	0	0	0	0	0	153	1004	1383	1522	1607	1649	1883	1893	1481	1332	1530	1557	1460	1203	347	0	0	0	0	19722.	24
14	0	0	0	0	0	85	769	1160	1198	1361	1220	899	1010	876	932	859	1388	1318	911	232	0	0	0	0	14217.	24
15	0	0	0	0	0	17	207	338	781	948	1182	433	77	115	50	643	1021	1200	643	11	0	0	0	0	7667.	24
16	0	0	0	0	0	2	7	12	56	96	618	872	214	10	71	73	1127	1040	101	9	0	0	0	0	4306.	24
17	0	0	0	0	0	2	9	142	522	409	1166	1008	1237	949	1095	624	1106	816	688	131	0	0	0	0	9905.	24
18	0	0	0	0	0	60	611	972	1160	1245	1287	1352	1360	1331	1303	1292	1227	1062	760	147	0	0	0	0	15212.	24
19	0	0	0	0	0	29	515	900	1094	1174	1142	734	591	584	780	1033	879	841	562	100	0	0	0	0	10956.	24
20	0	0	0	0	0	2	4	26	116	54	16	9	3	3	26	260	269	338	34	3	0	0	0	0	1162.	24
21	0	0	0	0	0	2	22	4	10	62	16	99	42	11	7	18	11	59	15	5	0	0	0	0	384.	24
22	0	0	0	0	0	2	3	93	471	638	436	735	824	972	820	880	987	942	728	177	0	0	0	0	8309.	24
23	0	0	0	0	0	22	584	993	1013	1233	1337	1078	1106	948	510	648	520	987	243	63	0	0	0	0	11266.	24
24	0	0	0	0	0	8	325	537	728	101	29	6	38	270%	501%	208	132	371	256	84	0	0	0	0	3573.	24
25	0	0	0	0	0	2	3	4	4	3	3	3	3	3	4	14	3	3	3	3	0	0	0	0	60.	24
26	0	0	0	0	0	2	12	4	419	507	978	1005	855	1187	408	64	5	3	3	3	0	0	0	0	5454.	24
27	0	0	0	0	0	2	4	242	811	1570	1807	1288	310	898	911	10	283	1205	1064	308	0	0	0	0	10494.	24
28	0	0	0	0	0	2	3	257	250	952	1010	454	1232	1616	1383	1025	542	876	707	146	0	0	0	0	10453.	24
29	0	0	0	0	0	43	574	775	1079	969	339	177	313	339	29	810	188	157	3	7	0	0	0	0	5802.	24
30	0	0	0	0	0	2	8	186	1055	1309	1290	1397	1378	1153	939	1263	990	1385	910	318	0	0	0	0	13576.	24
AV	0	0	0	0	0	26%	310%	517%	710%	852%	905%	748%	728%	747%	847%	878%	722%	780%	460%	110%	0	0	0	0	8920.6	
HR	30	30	30	30	30	26	28	26	26	28	28	28	26	28	26	28	28	28	28	28	30	30	30	30		670

FLAGS:
% = QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# = BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
& = ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-19

ATLANTA (GA TECH) YEAR 1979 MONTH 6

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	1546*	1865	1906	915	283	33	0	0	0	0	99999.*	14
2	0	0	0	0	0	32	400	1014	1571	2322	2918	2414	3090	2587	2279	1765	1347	1131	496	40	0	0	0	0	23406.	24
3	0	0	0	0	0	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	0	0	0	0	99999.*	9
4	0	0	0	0	0	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	0	0	0	0	99999.*	9
5	0	0	0	0	0	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	3039*	2499	1573	990	309	34	0	0	0	0	99999.*	14
6	0	0	0	0	0	5	95	240	401	371	550	647	465	769	1151	1901	786	911	418	75	0	0	0	0	8768.	24
7	0	0	0	0	0	8	178	600	1294	2184	2821	2244	2320	2456	1309	1137	879	1091	331	42	0	0	0	0	18893.	24
8	0	0	0	0	0	3	144	350	813	462	1799	1418	1159	2747	2533	1824	1729	935	444	80	0	0	0	0	16218.	24
9	0	0	0	0	0	12	234	592	1130	1914	1903	1281	1616	2078	2337	1390	1248	935	450	68	0	0	0	0	17187.	24
10	0	0	0	0	0	28	382	1019	1868	2349	2889	3180	3099	2621	2288	2479	1908	1121	436	14	0	0	0	0	25478.	24
11	0	0	0	0	0	26	454	1229	1991	2676	3224	3572	3710	3613	3307	2794	2148	1406	647	99	0	0	0	0	30897.	24
12	0	0	0	0	0	41	472	1173	1890	2545	3090	3485	3609	3390	2913$	2436	1999	1235	422	79	0	0	0	0	28760.	24
13	0	0	0	0	0	36	431	1107	1824	2484	3025	3402	3606	3429	2876	2692	2018	1311	593	79	0	0	0	0	28913.	24
14	0	0	0	0	0	31	393	1034	1867	2350	2756	2627	2847	2734	2604	2089	1915	1252	547	81	0	0	0	0	24928.	24
15	0	0	0	0	0	35	408	788	1847	2193	2888	2449	1978	1935	1388	2255	2108	1493	741	58	0	0	0	0	22341.	24
16	0	0	0	0	0	13	197	520	1086	1676	2719	3030	1286	932	1562	1345	2086	1335	218	36	0	0	0	0	18041.	24
17	0	0	0	0	0	33	305	892	1568	1998	2695	2906	3408	2823	2904	2052	1950	1054	506	68	0	0	0	0	25359.	24
18	0	0	0	0	0	28	386	1010	1758	2347	2863	3226	3393	3243	3015	2563	1938	1202	523	70	0	0	0	0	27545.	24
19	0	0	0	0	0	24	344	934	1624	2270	2754	2509	2455	2211	2460	2379	1716	1075	461	68	0	0	0	0	23283.	24
20	0	0	0	0	0	16	177	639	1075	1276	1173	1048	929	855	1515	1848	1528	963	283	15	0	0	0	0	13339.	24
21	0	0	0	0	0	19	248	437	683	1493	1533	2365	1869	1061	1268	1066	895	665	264	59	0	0	0	0	13924.	24
22	0	0	0	0	0	2	168	523	1409	1830	1840	2564	2837	2993	2225	1937	1792	1230	511	75	0	0	0	0	21937.	24
23	0	0	0	0	0	16	346	968	1608	2293	2863	3057	3230	2922	2147	1868	1248	1132	364	77	0	0	0	0	24181.	24
24	0	0	0	0	0	21	355	930	1586	1403	1205	1351	1133	1745	2461	1361	1170	968	597	84	0	0	0	0	16370.	24
25	0	0	0	0	0	14	93	194	364	397	479	431	387	612	1055	1573	816	433	236	42	0	0	0	0	7126.	24
26	0	0	0	0	0	21	260	478	1449	1964	3022	3244	3073	3269	2212	1229	697	405	229	48	0	0	0	0	21601.	24
27	0	0	0	0	0	15	194	820	1600	2511	3030	3342	2340	2999	2573	824	1152	1289	558	97	0	0	0	0	23345.	24
28	0	0	0	0	0	7	160	753	1159	2180	2641	2243	3047	3435	2937	2148	1405	1184	516	71	0	0	0	0	23664.	24
29	0	0	0	0	0	25	340	863	1620	2177	1899	2246	2531	2620	974	2614	1119	820	150	45	0	0	0	0	19743.	24
30	0	0	0	0	0	1	23	498	1603	2336	2885	3175	3328	3049	2506	2507	1704	1424	627	119	0	0	0	0	25782.	24
AV	0	0	0	0	0	20$	276$	753$	1360$	1923$	2372$	2440$	2413$	2428$	2185$	1927$	1527	1067$	434$	62$	0	0	0	0	21207.$	
HR	30	30	30	30	30	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	30	30	30	30		670

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-20

ATLANTA (GA TECH) YEAR 1979 MONTH 6

GLOBAL (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	881M	975	1155	544	160	10	0	0	0	0	99999.M	14
2	0	0	0	0	0	17	230	603	961	1405	1757	1440	1895	1595	1402	1112	859	728	324	20	0	0	0	0	14347.	24
3	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.M	9
4	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.M	9
5	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	1844M	1511	954	607	171	13	0	0	0	0	99999.M	14
6	0	0	0	0	0	2	45	120	209	175	275	322	230	424	660	1146	441	557	246	39	0	0	0	0	4893.	24
7	0	0	0	0	0	3	99	353	764	1315	1701	1307	1365	1429	748	650	487	656	187	15	0	0	0	0	11080.	24
8	0	0	0	0	0	2	78	195	342	245	1038	902	648	1606	1477	1057	1035	541	251	25	0	0	0	0	9342.	24
9	0	0	0	0	0	6	130	332	654	1142	1098	723	917	1203	1368	792	737	544	255	31	0	0	0	0	9932.	24
10	0	0	0	0	0	11	226	615	997	1403	1716	1861	1818	1538	1348	1500	1149	672	246	3	0	0	0	0	15122.	24
11	0	0	0	0	0	10	279	764	1233	1643	1986	2162	2235	2173	1989	1662	1290	853	395	53	0	0	0	0	18727.	24
12	0	0	0	0	0	22	302	741	1176	1571	1890	2107	2186	2048	1755$	1462	1219	773	236	40	0	0	0	0	17528.	24
13	0	0	0	0	0	19	276	697	1121	1521	1834	2048	2173	2071	1738	1632	1223	803	385	42	0	0	0	0	17581.	24
14	0	0	0	0	0	16	251	658	1039	1448	1686	1587	1711	1634	1572	1261	1163	773	343	44	0	0	0	0	15185.	24
15	0	0	0	0	0	25	262	468	1021	1339	1752	1465	1175	1148	811	1357	1282	920	474	37	0	0	0	0	13538.	24
16	0	0	0	0	0	12	128	318	649	994	1634	1635	756	538	917	793	1273	824	99	13	0	0	0	0	10781.	24
17	0	0	0	0	0	27	195	557	972	1218	1772	1752	2060	1890	1762	1235	1210	642	306	31	0	0	0	0	15430.	24
18	0	0	0	0	0	17	232	842	1094	1444	1732	1940	2034	1965	1814	1532	1163	727	313	32	0	0	0	0	16680.	24
19	0	0	0	0	0	14	221	593	1009	1393	1690	1514	1467	1476$	1486	1454	1054	661	274	30	0	0	0	0	14335.	24
20	0	0	0	0	0	11	105	391	643	748	670	587	512	469	878	1108	917	572	155	5	0	0	0	0	7773.	24
21	0	0	0	0	0	13	161	257	397	895	910	1399	1083	599	727	621	525	387	138	29	0	0	0	0	8139.	24
22	0	0	0	0	0	2	98	302	861	1105	1087	1542	1710	1803	1307	1168%	1141	770	313	38	0	0	0	0	13244.	24
23	0	0	0	0	0	7	218	612	994	1406	1729	1848	1940	1751	1263%	1117	711	666	197	36	0	0	0	0	14493.	24
24	0	0	0	0	0	11	215	566	941	810	680	759	635	1030	1458	798	677	558	361	44	0	0	0	0	9540.	24
25	0	0	0	0	0	12	58	112	206	223	265	226	196	326	592	914	488	245	131	22	0	0	0	0	3996.	24
26	0	0	0	0	0	16	164	284	876	1172	1821	1933	1824	1947	1306	712	397	228	127	23	0	0	0	0	12831.	24
27	0	0	0	0	0	13	119	505	968	1512	1816	1998	1371	1782	1525	428	671	795	341	55	0	0	0	0	13897.	24
28	0	0	0	0	0	5	95	484	707	1337	1624	1351	1832	2081	1791	1306%	839	745	317	33	0	0	0	0	14549.	24
29	0	0	0	0	0	14	215	538	1000	1339	1148	1348	1509	1570	550	1396	687	488	72	22	0	0	0	0	11674.	24
30	0	0	0	0	0	2	10	274	972	1408	1739	1903	1984	1811	1477	1495	1014	875	389	70	0	0	0	0	15424.	24
AV	0	0	0	0	0	128	170$	461$	839$	1162$	1424$	1453$	1433$	1450$	1297$	1150$	918$	646$	257$	31$	0	0	0	0	12705.$	
HR	30	30	30	30	30	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	30	30	30	30		670

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-21

ATLANTA (GA TECH) YEAR 1979 MONTH 6

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	1368#	1120	660	599	272	33	0	0	0	0	99999.#	14
2	0	0	0	0	0	23	226	435	646	739	877	1254	1505	1573	1542	1390	1118	1005	492	53	0	0	0	0	12879.	24
3	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.#	9
4	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.#	9
5	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	821#	879	977	806	325	42	0	0	0	0	99999.#	14
6	0	0	0	0	0	3	89	236	400	366	548	641	459	763	1152	1577	766	769	379	71	0	0	0	0	8221.	24
7	0	0	0	0	0	6	172	590	1082	1227	1429	1799	1555	1538	1075	905	879	746	295	48	0	0	0	0	13345.	24
8	0	0	0	0	0	2	137	352	617	466	1591	1432	1179	1542	1529	1205	1055	714	414	70	0	0	0	0	12306.	24
9	0	0	0	0	0	11	232	559	1058	1326	1553	1276	1641	2002	2063	1356	939	628	289	64	0	0	0	0	14997.	24
10	0	0	0	0	0	20	208	443	639	740	926	1147	1181	1390	1285	1339	1000	646	294	27	0	0	0	0	11286.	24
11	0	0	0	0	0	15	136	186	223	259	299	332	324	321	317	310	270	230	184	50	0	0	0	0	3435.	24
12	0	0	0	0	0	12	110	176	213	271	321	360	385	498	507$	516	596	394	226	63	0	0	0	0	4648.	24
13	0	0	0	0	0	16	146	243	319	381	449	479	566	666	784	472	392	300	207	60	0	0	0	0	5681.	24
14	0	0	0	0	0	18	190	370	625	717	1064	1215	1227	1389	1300	1098	815	458	292	88	0	0	0	0	10644.	24
15	0	0	0	0	0	27	341	550	880	964	1067	1712	1856	1756	1322	1393	1070	676	483	61	0	0	0	0	14159.	24
16	0	0	0	0	0	9	184	503	1009	1522	1714	1521	918	938	1458	1274	949	590	188	36	0	0	0	0	12812.	24
17	0	0	0	0	0	27	293	780	1105	1479	1187	1304	1314	1191	1194	1291	919	584	316	66	0	0	0	0	13049.	24
18	0	0	0	0	0	20	199	436	644	743	842	859	867	942	962	803	683	497	300	70	0	0	0	0	8866.	24
19	0	0	0	0	0	18	208	422	601	811	1077	1346	1520	1479$	1438	1197	983	633	337	79	0	0	0	0	12148.	24
20	0	0	0	0	0	15	175	628	982	1232	1175	1059	946	865	1505	1588	1311	757	287	19	0	0	0	0	12544.	24
21	0	0	0	0	0	18	242	439	678	1437	1520	2219	1632	1083	1283	1074	915	657	277	67	0	0	0	0	13749.	24
22	0	0	0	0	0	1	162	456	929	1020	1188	1364	1430	1351	1271	1146	931	702	320	73	0	0	0	0	12345.	24
23	0	0	0	0	0	13	199	402	645	745	830	1284	1355	1426	1460	1084	793	470	300	86	0	0	0	0	11095.	24
24	0	0	0	0	0	19	260	611	867	1287	1183	1365	1082	1255	1643	1080	1052	716	533	85	0	0	0	0	13037.	24
25	0	0	0	0	0	9	81	183	351	387	471	424	378	607	1051	1559	826	435	235	39	0	0	0	0	7035.	24
26	0	0	0	0	0	16	250	470	1017	1283	1503	1504	1548	1180	1574	1172	714	416	235	48	0	0	0	0	12929.	24
27	0	0	0	0	0	8	181	665	769	490	609	1220	1839	1483	1156	847	928	533	245	79	0	0	0	0	11054.	24
28	0	0	0	0	0	4	151	615	922	1062	1213	1555	1004	778	900	931	899	694	335	65	0	0	0	0	11126.	24
29	0	0	0	0	0	18	213	454	718	1088	1461	1993	2051	2140	977	1364	993	762	170	51	0	0	0	0	14453.	24
30	0	0	0	0	0	1	34	374	626	883	906	802	921	1091	1048	815	689	470	329	94	0	0	0	0	8887.	24
AV	0	0	0	0	0	13$	185$	445$	714$	874$	1039$	1210$	1188$	1209$	1223$	1099$	954$	603$	305$	60$	0	0	0	0	11023.$	
HR	30	30	30	30	30	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	30	30	30	30		670

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-22

ATLANTA (GA TECH) YEAR 1979 MONTH 6

LAT. TILTED KJ/M2

DAY \ HOUR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	1339M	1472	1586	686	210	22	0	0	0	0	99999.M	14
2	0	0	0	0	0	21	203	660	1244	2037	2703	2308	2937	2459	2126	1571	1177	938	388	35	0	0	0	0	20805.	24
3	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.M	9
4	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.M	9
5	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	2792M	2225	1329	776	261	30	0	0	0	0	99999.M	14
6	0	0	0	0	0	4	81	207	355	329	477	601	426	693	1033	1681	677	694	301	58	0	0	0	0	7617.	24
7	0	0	0	0	0	8	152	502	1103	1904	2556	2093	2166	2298	1207	962	747	802	232	35	0	0	0	0	16766.	24
8	0	0	0	0	0	3	125	309	548	395	1637	1257	1015	2581	2331	1633	1449	722	327	49	0	0	0	0	14380.	24
9	0	0	0	0	0	12	200	478	970	1669	1705	1180	1452	1914	2160	1186	1025	697	237	40	0	0	0	0	14924.	24
10	0	0	0	0	0	19	172	632	1302	2021	2633	2991	2932	2448	2121	2194	1581	813	247	12	0	0	0	0	22119.	24
11	0	0	0	0	0	19	151	692	1504	2276	2904	3317	3481	3370	3015	2428	1706	897	229	38	0	0	0	0	26026.	24
12	0	0	0	0	0	16	131	654	1427	2162	2789	3227	3393	3179	2651$	2123	1606	631	207	41	0	0	0	0	24437.	24
13	0	0	0	0	0	17	150	641	1389	2118	2731	3167	3381	3203	2639	2365	1634	854	236	38	0	0	0	0	24564.	24
14	0	0	0	0	0	18	175	641	1293	2019	2491	2450	2684	2559	2386	1831	1554	858	286	47	0	0	0	0	21292.	24
15	0	0	0	0	0	25	284	577	1323	1903	2649	2267	1839	1774	1240	1988	1719	1079	480	51	0	0	0	0	19220.	24
16	0	0	0	0	0	12	175	449	926	1448	2466	2815	1198	818	1439	1213	1656	895	152	30	0	0	0	0	15693.	24
17	0	0	0	0	0	29	256	728	1256	1701	2635	2727	3244	2710	2676	1775	1612	762	282	44	0	0	0	0	22436.	24
18	0	0	0	0	0	20	175	631	1370	2027	2620	3025	3213	3050	2757	2249	1578	837	276	44	0	0	0	0	23873.	24
19	0	0	0	0	0	16	176	591	1265	1953	2507	2355	2319	2095	2280	2088	1407	772	283	49	0	0	0	0	20157.	24
20	0	0	0	0	0	15	157	533	934	1127	1045	941	854	756	1366	1632	1280	761	237	14	0	0	0	0	11650.	24
21	0	0	0	0	0	17	198	392	605	1305	1367	2179	1892	952	1131	977	806	559	209	49	0	0	0	0	12438.	24
22	0	0	0	0	0	3	131	390	1136	1603	1677	2386	2648	2812	2055	1746	1524	927	293	50	0	0	0	0	19381.	24
23	0	0	0	0	0	12	167	599	1237	1961	2615	2854	3046	2720	1949	1697	1036	787	265	55	0	0	0	0	21000.	24
24	0	0	0	0	0	17	208	633	1251	1223	1091	1229	1034	1632	2244	1213	978	764	432	64	0	0	0	0	14013.	24
25	0	0	0	0	0	13	84	175	326	354	424	383	338	544	933	1409	731	377	202	38	0	0	0	0	6332.	24
26	0	0	0	0	0	19	234	415	1199	1702	2674	3019	2882	3081	2045	1059	588	352	195	39	0	0	0	0	19502.	24
27	0	0	0	0	0	14	165	603	1256	2131	2767	3174	2181	2851	2392	762	1014	908	254	48	0	0	0	0	20521.	24
28	0	0	0	0	0	6	136	565	974	1861	2373	2062	2932	3261	2724	1884	1223	864	297	44	0	0	0	0	21205.	24
29	0	0	0	0	0	17	171	548	1233	1853	1738	2070	2389	2373	877	2071	958	659	133	39	0	0	0	0	17128.	24
30	0	0	0	0	0	2	15	374	1211	1978	2590	2964	3140	2840	2321	2219	1407	989	322	69	0	0	0	0	22440.	24
AV	0	0	0	0	0	14$	164$	524$	1101$	1656$	2149$	2271$	2262$	2268$	2004$	1702$	1271$	781$	267$	42$	0	0	0	0	18477.$	
HR	30	30	30	30	30	26	26	26	26	26	28	26	26	26	26	28	28	28	28	28	30	30	30	30		670

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-23

ATLANTA (GA TECH) YEAR 1979 MONTH 6

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	94M	92	90	45	15	3	0	0	0	0	99999.M	14
2	0	0	0	0	0	1	17	46	79	117	145	128	146	120	104	74	52	39X	14X	1	0	0	0	0	1088.	24
3	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.M	9
4	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.M	9
5	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	144M	118	73	44	17	2	0	0	0	0	99999.M	14
6	0	0	0	0	0	0	6	16	28	27	39	48	35	52	71	98	43	42	19	3	0	0	0	0	528.	24
7	0	0	0	0	0	0	9	33	73	114	138	124	123	133	74	61	54	53	18	3	0	0	0	0	1010.	24
8	0	0	0	0	0	0	6	20	39	31	105	87	73	150	135	99	82	49	23	4	0	0	0	0	900.	24
9	0	0	0	0	0	1	13	37	66	101	110	78	98	118	125	81	65	50	24	4	0	0	0	0	969.	24
10	0	0	0	0	0	1	19	50	84	121	152	169	168	141	121	115	87	51	23	3	0	0	0	0	1307.	24
11	0	0	0	0	0	2	21	57	99	140	174	196	204	195	174	141	103	64	28	5	0	0	0	0	1602.	24
12	0	0	0	0	0	2	20	53	91	128	160	184	193	181	152&	123	91	52	23	4	0	0	0	0	1458.	24
13	0	0	0	0	0	1	19	50	87	125	156	179	188	174	148	130	94	58	26	5	0	0	0	0	1437.	24
14	0	0	0	0	0	1	18	47	79	116	139	141	153	147	134	106	90	55	24	4	0	0	0	0	1254.	24
15	0	0	0	0	0	1	17	41	81	115	153	139	117	111	82	117	100	66	27	2	0	0	0	0	1169.	24
16	0	0	0	0	0	1	10	29	63	97	147	162	76	62	93	76	98	58	22	4	0	0	0	0	998.	24
17	0	0	0	0	0	1	15	45	78	106	148	153	175	150	143	104	87	49	23	4	0	0	0	0	1281.	24
18	0	0	0	0	0	1	17	46	82	113	146	166	174	157	144	123	89	54	24	5	0	0	0	0	1341.	24
19	0	0	0	0	0	1	16	42	74	107	130	127	127	123&	120	109	76	48	22	4	0	0	0	0	1128.	24
20	0	0	0	0	0	1	10	33	59	75	72	69	62	56	88	96	77	49	18	1	0	0	0	0	764.	24
21	0	0	0	0	0	1	11	28	41	84	87	130	108	66	75	60	48	36	17	3	0	0	0	0	794.	24
22	0	0	0	0	0	0	9	33	73	98	105	136	147	152	120	95	75	49	22	4	0	0	0	0	1118.	24
23	0	0	0	0	0	1	18	43	75	108	142	151	162	146	114	96	70	54	21	5	0	0	0	0	1206.	24
24	0	0	0	0	0	1	18	47	84	80	75	86	70	103	141	80	68	54	25	5	0	0	0	0	938.	24
25	0	0	0	0	0	0	6	13	25	27	33	32	30	45	70	95	51	27	15	2	0	0	0	0	473.	24
26	0	0	0	0	0	1	13	27	76	109	158	176	171	178	124	71	43	25	14	3	0	0	0	0	1188.	24
27	0	0	0	0	0	0	12	41	84	129	181	179	135	160	138	88	67	57	26	5	0	0	0	0	1263.	24
28	0	0	0	0	0	0	10	35	61	108	132	119	161	173	142	104	58	48	23	4	0	0	0	0	1186.	24
29	0	0	0	0	0	1	16	42	76	103	100	118	134	132	59	113	59	41	10	2	0	0	0	0	1006.	24
30	0	0	0	0	0	0	1	31	83	125	154	170	178	163	136	126	86	61	26	5	0	0	0	0	1344.	24
AV	0	0	0	0	0	1&	13&	38&	71&	100&	125&	133&	131&	130&	116&	99&	75&	49&	21&	4&	0	0	0	0	1106.&	
HR	30	30	30	30	30	28	28	28	26	28	28	28	28	26	26	28	28	28	28	28	30	30	30	30		670

FLAGS:
X - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
& - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-24

ATLANTA (GA TECH) YEAR 1979 MONTH 6

AVAILABLE SUNSHINE %

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	0	0	0	0	0	10	0	20	50	0	37	100	65	0	0	0	0	0	0	39.	24
2	0	0	0	0	0	0	57	95	100	100	100	63	88	77	67	28	22	10	0	0	0	0	0	0	57.	24
3	0	0	0	0	0	0	0	0	20	10	0	0	40	60	40	20	10	10	0	0	0	0	0	0	0.	24
4	0	0	0	0	0	0	0	0	90	100	100	100	100	100	100	90	90	100	40	0	0	0	0	0	0.	24
5	0	0	0	0	0	0	20	100	100	100	100	100	80	100	100	100	82	28	0	0	0	0	0	0	53.	24
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0	10	0	0	0	0	0	0	3.	24
7	0	0	0	0	0	0	0	0	22	78	98	33	52	57	17	23	0	70	10	0	0	0	0	0	32.	24
8	0	0	0	0	0	0	0	0	0	0	13	0	0	86	67	57	68	38	0	0	0	0	0	0	23.	24
9	0	0	0	0	0	0	0	2	3	53	23	0	0	7	18	7	30	58	87	0	0	0	0	0	19.	24
10	0	0	0	0	0	0	72	100	100	100	100	90	85	62	60	88	100	95	60	0	0	0	0	0	78.	24
11	0	0	0	0	0	0	97	100	100	100	100	100	100	100	100	100	100	100	100	84	0	0	0	0	96.	24
12	0	0	0	0	0	21	100	100	100	100	100	100	100	100	100	90	92	97	53	18	0	0	0	0	89.	24
13	0	0	0	0	0	7	100	100	100	100	100	100	100	92	87	100	100	100	100	41	0	0	0	0	93.	24
14	0	0	0	0	0	0	80	100	95	100	90	70	73	65	77	65	98	100	100	4	0	0	0	0	79.	24
15	0	0	0	0	0	0	13	33	85	97	95	47	2	0	2	57	83	90	50	0	0	0	0	0	46.	24
16	0	0	0	0	0	0	0	0	0	2	55	80	20	0	7	5	97	92	0	0	0	0	0	0	25.	24
17	0	0	0	0	0	0	0	13	60	37	100	87	100	77	92	75	100	78	73	0	0	0	0	0	63.	24
18	0	0	0	0	0	0	65	100	100	100	100	100	100	100	100	100	100	100	87	0	0	0	0	0	88.	24
19	0	0	0	0	0	0	48	100	100	100	98	70	53	57	73	98	90	97	42	0	0	0	0	0	72.	24
20	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	28	20	40	0	0	0	0	0	0	6.	24
21	0	0	0	0	0	0	0	0	0	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
22	0	0	0	0	0	0	0	2	67	83	42	67	78	82	58	83	87	93	78	2	0	0	0	0	56.	24
23	0	0	0	0	0	0	80	100	100	100	100	85	88	82	53	57	43	87	23	0	0	0	0	0	69.	24
24	0	0	0	0	0	0	25	72	83	8	2	0	0	27	52	18	2	50	20	0	0	0	0	0	25.	24
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
26	0	0	0	0	0	0	0	0	47	52	92	85	72	90	43	7	0	0	0	0	0	0	0	0	34.	24
27	0	0	0	0	0	0	0	20	70	100	100	88	30	70	65	0	23	93	100	29	0	0	0	0	55.	24
28	0	0	0	0	0	0	0	23	25	100	100	45	83	100	90	75	42	88	78	0	0	0	0	0	60.	24
29	0	0	0	0	0	0	52	77	100	98	32	10	28	27	2	88	20	12	0	0	0	0	0	0	37.	24
30	0	0	0	0	0	0	0	22	90	98	95	88	88	83	72	88	75	100	83	29	0	0	0	0	71.	24
MV	0	0	0	0	0	2	30	45	60	86	67	54	52	55	49	52	58	64	40	9	0	0	0	0	47.	
HR	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		720

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
S - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-25

ATLANTA (GA TECH) YEAR 1979 MONTH 7

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	130	1508	2384	2765	2996	3123	3196	3108	2565	2430	1873	730	187	4	194	0	0	0	0	27192.	24
2	0	0	0	0	0	80	373	1347	1876	2473	2707	2116	2418	1847	2160	1503	1603	133	20	2	0	0	0	0	20659.	24
3	0	0	0	0	0	26	393	248	248	66	1938	2424	1686	1792	1460	224	1708	1250	785	2	0	0	0	0	14231.	24
4	0	0	0	0	0	6	283	819	1419	1597	1879	2437	2009	2395	1485	1822	1818	1716	1058	328	0	0	0	0	20870.	24
5	0	0	0	0	0	1	361	580	1670	42	877	487	1998	604	488	767	672	1214	485	28	0	0	0	0	10075.	24
6	0	0	0	0	0	4	181	187	2	19	293	77	3M	9999M	9999M	9999M	9999M	6M	8M	6	0	0	0	0	99999.M	17
7	0	0	0	0	0	3	6	6	6	6	6	5	5	5	5	6	48	5	5	5	0	0	0	0	121.	24
8	0	0	0	0	0	2	5	5	5	5	5	5	5	5	5	5	5	5	5	4	0	0	0	0	69.	24
9	0	0	0	0	0	2	4	5	4	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	62.	24
10	0	0	0	0	0	2	4	4	4$	4	4	4	4	4	4	4	4	4	4	3	0	0	0	0	56.	24
11	0	0	0	0	0	2	4	4	161	25	18	4	5	3	142	12	4	4	4	3	0	0	0	0	393.	24
12	0	0	0	0	0	2	4	57	131	462	85	545	823	947	1461%	1216%	1536	770	1064	112	0	0	0	0	8104.$	22
13	0	0	0	0	0	1	107	484	391	1082	1691	1399	2400	2321$	2241	782	1466	1284	24	3	0	0	0	0	15676.	24
14	0	0	0	0	0	15	60	1188	2585	2908	3058	3139	2649	1627	1826	1179	1291	993	1231	202	0	0	0	0	23953.	24
15	0	0	0	0	0	16	797	821	182	794	2070	2206	2158	1902	2296	1836	1806	2092	1219	3	0	0	0	0	20197.	24
16	0	0	0	0	0	12	636	1512	2337	2550	2750	2775	2706	2815	2878	2629	1951	1587	702	67	0	0	0	0	27907.	24
17	0	0	0	0	0	3	409	1006	1481	1708	1844	1761	1738$	1712	1343	1798	1662	1552	867	105	0	0	0	0	18986.	24
18	0	0	0	0	0	1	3	3	3	12	7	43	96	839	1514	1182	813	358	3	3	0	0	0	0	4880.	24
19	0	0	0	0	0	1	3	139	139	94	3	3	5	8	755	557	151	228	50	3	0	0	0	0	2140.	24
20	0	0	0	0	0	1	3	3	3	3	3	3	33	163$	293	185	3	77	35	3	0	0	0	0	813.	24
21	0	0	0	0	0	1	34	218	1012	667	370	356	101	45	874	233	3	3	3	3	0	0	0	0	3924.	24
22	0	0	0	0	0	1	3	3	3	3	3	3	3	84	881	1253	707	850	514	10	0	0	0	0	4322.	24
23	0	0	0	0	0	1	3	3	3	879	1789	1147	990	841	957	346	138	20	817	138	0	0	0	0	7673.	24
24	0	0	0	0	0	1	3	72	144$	216	293	87	798	694	3	3	22	112	3	2	0	0	0	0	2455.	24
25	0	0	0	0	0	1	3	3	4	3	3	3	3	127	49	141	3	3	3	2	0	0	0	0	351.	24
26	0	0	0	0	0	1	317	3	3	6	98	3	3	3	11	55	374	62	3	2	0	0	0	0	947.	24
27	0	0	0	0	0	1	107	167	1212	822	1532	1213	389	147	631$	1115	601	321	429	24	0	0	0	0	8692.	24
28	0	0	0	0	0	1	263	1679	2545	2577	2251	2560	2426	1737	2128	2359	2262	1849	779	4	0	0	0	0	25420.	24
29	0	0	0	0	0	1	3	400	545	546	866	727	1067	1218	1626	942	1411	1065	755	38	0	0	0	0	11211.	24
30	0	0	0	0	0	1	505	1361	1954	2251	1394	965	1835	1580	1508	2135	1889	435	3	2	0	0	0	0	17770.	24
31	0	0	0	0	0	1	32	779	1987	1945	1638	1529	1695$	1862	2166	2425	2310	2280	1624	262	0	0	0	0	22534.	24
AV	0	0	0	0	0	10	207	500	801	863	1039	1007	1105$	889$	1109$	944$	899$	682$	409$	51	0	0	0	0	10616.$	
HR	31	31	31	31	31	31	31	31	31	31	31	31	30	30	28	29	30	30	30	31	31	31	31	31		735

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-26

ATLANTA (GA TECH) YEAR 1978 MONTH 7

DIRECT (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	126	1221	1745	1899	1993	2046	2073	2007	1673	1605	1255	508	136	7	185	0	0	0	0	18479.	24
2	0	0	0	0	0	98	315	991	1299	1655	1773	1375	1581	1213	1442	1050	1171	107	21	3	0	0	0	0	14092.	24
3	0	0	0	0	0	34	367	208	188	42	1303	1632	1137	1261	1105	182	1256	986	672	3	0	0	0	0	10378.	24
4	0	0	0	0	0	8	270	659	1054	1121	1124	1558	1290	1546	984	1224	1241	1208	823	306	0	0	0	0	14416.	24
5	0	0	0	0	0	2	298	419	1155	26	440	324	1302	404	337	540	502	954	431	30	0	0	0	0	7162.	24
6	0	0	0	0	0	5	171	159	3	12	198	49	3M	9999M	9999M	9999M	9999M	9M	9M	8	0	0	0	0	99999.M	17
7	0	0	0	0	0	4	8	8	8	8	8	8	8	8	8	8	34	8	8	7	0	0	0	0	143.	24
8	0	0	0	0	0	4	8	8	8	8	8	8	8	8	8	8	8	8	8	7	0	0	0	0	111.	24
9	0	0	0	0	0	3	7	8	7	8	7	7	7	7	7	7	7	7	7	6	0	0	0	0	106.	24
10	0	0	0	0	0	3	7	7	7$	7	7	7	7	7	7	7	7	7	7	6	0	0	0	0	101.	24
11	0	0	0	0	0	3	7	7	118	20	14	6	7	7	31	12	7	7	7	6	0	0	0	0	256.	24
12	0	0	0	0	0	3	7	42	84	282	54	326	489	566	827M	772M	1002	563	829	113	0	0	0	0	5371.	$22
13	0	0	0	0	0	3	107	405	291	759	1135	944	1591	1556$	1522	541	1080	1029	25	6	0	0	0	0	10993.	24
14	0	0	0	0	0	16	64	819	1892	1838	1902	1942	1641	1033	1241	848	967	806	1040	199	0	0	0	0	16045.	24
15	0	0	0	0	0	18	693	611	115	523	1384	1436	1418	1292	1559	1256	1257	1481	950	5	0	0	0	0	13999.	24
16	0	0	0	0	0	15	585	1179	1601	1672	1764	1779	1745	1805	1838	1733	1345	1211	638	75	0	0	0	0	18984.	24
17	0	0	0	0	0	5	387	822	1124	1239	1298	1220	1208$	1198	957	1299	1231	1186	740	109	0	0	0	0	14023.	24
18	0	0	0	0	0	2	6	6	8	11	7	31	70	604	1105	886	837	307	7	5	0	0	0	0	3690.	24
19	0	0	0	0	0	2	6	125	117	70	6	6	6	6	477	353	99	160	39	5	0	0	0	0	1478.	24
20	0	0	0	0	0	2	6	6	6	6	6	6	21	101$	181	120	6	53	25	5	0	0	0	0	549.	24
21	0	0	0	0	0	2	29	146	657	414	227	222	85	32	379%	144	6	6	6	5	0	0	0	0	2340.	24
22	0	0	0	0	0	2	8	6	6	6	6	6	8	48	522	781	449	560	404	12	0	0	0	0	2817.	24
23	0	0	0	0	0	2	6	6	8	557	1097	697	610	386	576	208	87	15	474	123	0	0	0	0	4849.	24
24	0	0	0	0	0	2	6	54	93$	132	172	53	458	407	6	6	16	64	8	4	0	0	0	0	1477.	24
25	0	0	0	0	0	2	6	6	6	5	5	5	5	73	30	81	6	6	6	4	0	0	0	0	244.	24
26	0	0	0	0	0	2	246	6	6	6	54	6	6	5	9	30	218	39	6	4	0	0	0	0	641.	24
27	0	0	0	0	0	1	92	109	763	495	930	731	228	96	380$	663	354	205	317	23	0	0	0	0	5387.	24
28	0	0	0	0	0	1	202	1146	1820	1588	1383	1550	1467	1060	1326	1511	1495	1282	602	7	0	0	0	0	16239.	24
29	0	0	0	0	0	1	6	279	384	384	600	513	727	841	1151	706	1068	881	695	43	0	0	0	0	8277.	24
30	0	0	0	0	0	1	471	1100	1430	1577	980	675	1284	1088	1085	1496	1360	380	6	4	0	0	0	0	12935.	24
31	0	0	0	0	0	1	35	577	1389	1294	1091	1053	1178$	1302	1459	1595	1568	1609	1269	242	0	0	0	0	15664.	24
AV	0	0	0	0	0	12	182	376	653	573	678	653	719$	654$	736$	639$	633$	510$	336$	50	0	0	0	0	7305.$	
HR	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29	28	30	30	30	31	31	31	31	31		735

FLAGS:
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# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
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TABLE A-27

ATLANTA (GA TECH) YEAR 1979 MONTH 7

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	28	404	1091	1798	2467	3030	3419	3547	3325	3037	2374	1485	796	291	106	0	0	0	0	27201.	24
2	0	0	0	0	0	26	281	861	1528	2293	2912	3650	3448	3045	2897	2324	1673	613	320	60	0	0	0	0	25111.	24
3	0	0	0	0	0	35	385	805	1058	1183	2760	3206	2836	2965	2538	867	1860	1104	509	22	0	0	0	0	21931.	24
4	0	0	0	0	0	10	291	835	1520	2058	2629	3245	3037	3324	2509	2427	1852	1190	541	120	0	0	0	0	25586.	24
5	0	0	0	0	0	6	277	599	1637	1170	2129	1926	3079	2045	1623	1735	1265	1272	538	84	0	0	0	0	19384.	24
6	0	0	0	0	0	22	253	735	425	1183	2228	1986	1225#	9999#	9999#	9999#	9999#	9999#	319#	116#	42	0	0	0	99999.#	17
7	0	0	0	0	0	17	78	140	164	265	373	455	480	558	774	817	1201	326	127	43	0	0	0	0	5819.	24
8	0	0	0	0	0	17	94	179	216	302	377	368	329	427	484	363	381	197	110	36	0	0	0	0	3881.	24
9	0	0	0	0	0	16	93	177	225	204	330	394	508	809	559	371	278	225	85	32	0	0	0	0	4084.	24
10	0	0	0	0	0	16	95	226	332$	437	664	650	749	661	539	505	387	235	151	54	0	0	0	0	5700.	24
11	0	0	0	0	0	26	192	476	1070	1221	1423	1212	1347	1053	947	1000	519	376	118	10	0	0	0	0	10989.	24
12	0	0	0	0	0	1	175	400	748	1483	940	2110	2383	2433	2445#	2137#	1970	923	557	43	0	0	0	0	18041.$	22
13	0	0	0	0	0	1	218	734	1150	1800	2487	2545	3457	3229$	3002	1997	1710	1133	148	28	0	0	0	0	23638.	24
14	0	0	0	0	0	7	151	731	1894	2393	2974	3387	3318	2526	2682	1880	1594	1011	625	73	0	0	0	0	25048.	24
15	0	0	0	0	0	4	264	784	907	1639	2671	3129	3243	3014	2980	2226	1731	1248	473	2	0	0	0	0	24314.	24
16	0	0	0	0	0	3	256	912	1688	2392	2936	3316	3493	3408	3140	2653	1792	1317	469	30	0	0	0	0	27802.	24
17	0	0	0	0	0	2	244	820	1528	2203	2774	3035	3083$	3131	2470	2568	1882	1224	540	78	0	0	0	0	25582.	24
18	0	0	0	0	0	1	42	245	502	979	1312	1810	2041	2666	2860	2200	1345	763	92	3	0	0	0	0	16860.	24
19	0	0	0	0	0	1	60	601	911	1299	768	1067	1525	1563	2297	1648	854	745	284	15	0	0	0	0	13838.	24
20	0	0	0	0	0	1	36	118	162	264	440	839	1473	1465$	1458	688	124	525	222	31	0	0	0	0	7647.	24
21	0	0	0	0	0	2	128	457	1314	1754	1843	1858	933	707	1611	812	92	4	5	3	0	0	0	0	11522.	24
22	0	0	0	0	0	1	26	99	353	195	86	123	518	1424	2742	2449	1626	1094	571	56	0	0	0	0	11364.	24
23	0	0	0	0	0	1	28	369	447	1514	2892	2679	2424	2500	2831	1626	1185	667	552	84	0	0	0	0	19599.	24
24	0	0	0	0	0	1	58%	504	935$	1365	1746	1513	2710	2268	387	257	565	795	266	20	0	0	0	0	13370.	24
25	0	0	0	0	0	1	97	334	722	1075	1003	712	726	1488	1503	1638	652	190	55	5	0	0	0	0	10200.	24
26	0	0	0	0	0	1	231	452	716	1181	1712	1344	1136	1453	1633	1561	1486	649	220	29	0	0	0	0	13806.	24
27	0	0	0	0	0	1	174	569	1289	1789	2469	2544	1283	1079	1690$	2301	1479	771	466	32	0	0	0	0	17936.	24
28	0	0	0	0	0	1	134	784	1704	2295	2639	3163	3106	2826	2798	2599	1904	1195	411	14	0	0	0	0	25372.	24
29	0	0	0	0	0	2	103	607	1301	1545	1957	2038	2235	2395	2577	1690	1669	984	416	19	0	0	0	0	19539.	24
30	0	0	0	0	0	1	183	774	1485	2153	2227	1987	3062	2624	2353	2409	1725	628	125	7	0	0	0	0	21703.	24
31	0	0	0	0	0	1	69	544	1533	2185	2383	2591	2773$	2955	2786	2448	1854	1222	488	30	0	0	0	0	23862.	24
AV	0	0	0	0	0	8	165	541	1001	1428	1842	1983	2143$	2099$	2051$	1677$	1271$	781$	325$	39	0	0	0	0	17354.$	
HR	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29	29	30	30	30	31	31	31	31	31		735

FLAGS:
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# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
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OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-28

ATLANTA (GA TECH) YEAR 1979 MONTH 7

GLOBAL (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	17	262	692	1115	1512	1834	2055	2128	2000	1820	1416	882	466	162	63	0	0	0	0	16424.	24
2	0	0	0	0	0	16	159	536	945	1404	1754	1690	2066	1804	1728	1395	1001	350	174	27	0	0	0	0	15050.	24
3	0	0	0	0	0	25	245	365	641	698	1669	1923	1696	1794	1541	497	1127	670	300	7	0	0	0	0	13198.	24
4	0	0	0	0	0	4	178	510	917	1231	1559	1911	1769	1953	1456	1431	1084	695	313	70	0	0	0	0	15081.	24
5	0	0	0	0	0	2	163	353	1002	675	1256	1120	1830	1186	934	1014	718	779	325	48	0	0	0	0	11406.	24
6	0	0	0	0	0	13	150	444	235	675	1325	1156	689N	9999N	9999N	9999N	9999N	204N	93N	53	0	0	0	0	99999.	N17
7	0	0	0	0	0	28%	76	104	110	163	219	263	280	326	442	473	708	203	100	54	0	0	0	0	3546.	24
8	0	0	0	0	0	27%	90	132	146	183	219	213	185	224	258	202	216	128	87	47%	0	0	0	0	2357.	24
9	0	0	0	0	0	23%	79	122	148	135	192	214	267	320	298	208	164	143	64	45%	0	0	0	0	2422.	24
10	0	0	0	0	0	22%	83	154	204$	254	380	374	430	381	314	306	244	163	120	65%	0	0	0	0	3496.	24
11	0	0	0	0	0	31%	146	300	633	705	800	668	726	576	482%	516%	247	176	41	4	0	0	0	0	6051.	24
12	0	0	0	0	0	2	79	202	401	795%	475%	1152	1306	1341	1275N	1194N	1104	510	310	10	0	0	0	0	9787.	$22
13	0	0	0	0	0	2	119	422	849	1035	1410	1448	1971	1839$	1707	1112	963%	645	44	8	0	0	0	0	13373.	24
14	0	0	0	0	0	3	72	405	968	1361	1684	1919	1873	1406%	1527%	1054%	907%	574%	360	30	0	0	0	0	14142.	24
15	0	0	0	0	0	2	144	446	491	910	1515	1774	1841	1741	1697	1252	968%	703	256	3	0	0	0	0	13743.	24
16	0	0	0	0	0	1	139	537	979	1377	1883	1897	1994	1947	1785	1511	1015	765	263	8	0	0	0	0	15902.	24
17	0	0	0	0	0	1	132	479	897	1279	1603	1754	1789$	1825	1416%	1490	1085	704	302	35	0	0	0	0	14790.	24
18	0	0	0	0	0	1	15	126	271	547	727	1020	1150	1529	1665	1296	771	431	37	3	0	0	0	0	9589.	24
19	0	0	0	0	0	1	21	338	508	714	390	548%	815	844	1273	1014	441	396	137	5	0	0	0	0	7445.	24
20	0	0	0	0	0	1	11	41	57	107	197	426%	794	796$	799	364	39	269	105	10	0	0	0	0	4016.	24
21	0	0	0	0	0	1	59	236	732	981	1026	1039	494	345%	876	418%	24	4	4	3	0	0	0	0	6243.	24
22	0	0	0	0	0	1	6	25	155	70	11	26	235	768	1582	1408	919	616	323	23	0	0	0	0	6168.	24
23	0	0	0	0	0	1	7	181	209	818%	1636	1489	1337	1385	1470	887	644	354	313	38	0	0	0	0	10768.	24
24	0	0	0	0	0	1	29%	259	499$	739	943	805	1494	1237	150	95	279	426	126	6	0	0	0	0	7090.	24
25	0	0	0	0	0	1	41	164	374	564%	516%	340%	345%	748%	798	896	336	79	13	3	0	0	0	0	5218.	24
26	0	0	0	0	0	1	128	242	387	639	940	717	600%	783	892	856	821	339	103	11	0	0	0	0	7460.	24
27	0	0	0	0	0	1	92	310	718	1002	1397	1435	695	554%	923$	1292	819	413	255	12	0	0	0	0	9917.	24
28	0	0	0	0	0	1	59	445	979	1321	1497	1785	1737	1457	1562	1472	1071	667	211	3	0	0	0	0	14266.	24
29	0	0	0	0	0	1	38	357	722	876	1109	1151	1255%	1348%	1469	941%	964%	569	231	6	0	0	0	0	11038.	24
30	0	0	0	0	0	1	96	457	874	1281	1287%	1105%	1771	1501%	1368%	1395	987	345	49	3	0	0	0	0	12500.	24
31	0	0	0	0	0	1	22	295	887	1263	1397	1491%	1590$	1689	1602	1380	1053	697	271	11	0	0	0	0	13649.	24
AV	0	0	0	0	0	8	95	312	578	818	1053	1126	1215$	1188$	1187$	951$	720$	443$	180$	23	0	0	0	0	9873.	$
HR	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29	29	30	30	30	31	31	31	31	31		735

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
N - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-29

ATLANTA (GA TECH) YEAR 1979 MONTH 7

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	16	187%	235	290	351	421	472	572	922	924	949	1054	731	305	105	0	0	0	0	7534.	24
2	0	0	0	0	0	19	195	361	519	559	671	936	1167	1349	1058	1220	711	584	335	71	0	0	0	0	9755.	24
3	0	0	0	0	0	33	316	538	941	1153	1149	994	1261	1323	1309	732	871	597	350	41	0	0	0	0	11607.	24
4	0	0	0	0	0	9	243	529	772	936	1249	1023	1140	1100	1260	1082	787	479	308	109	0	0	0	0	11008.	24
5	0	0	0	0	0	6	205	388	749	1168	1586	1503	1195	1527	1246	1182	888	724	424	89	0	0	0	0	12884.	24
6	0	0	0	0	0	19	214	669	432	1158	1999	1943	1254#	9999#	9999#	9999#	9999#	281#	75#	8	0	0	0	0	99999.#	17
7	0	0	0	0	0	2	27	86	110	213	321	405	431	510	725	768	1124	287	84	7	0	0	0	0	5099.	24
8	0	0	0	0	0	1	46	131	168	249	324	316	275	371	427	310	329	147	64	4	0	0	0	0	3161.	24
9	0	0	0	0	0	1	46	129	175	154	275	337	456	558	511	326	232	181	23	3	0	0	0	0	3407.	24
10	0	0	0	0	0	1	55	188	286$	384	613	601	697	611	489	456	339	186	102	18	0	0	0	0	5025.	24
11	0	0	0	0	0	8	139	425	916	1145	1352	1162	1291	1009	818	1021	555	410	152	24	0	0	0	0	10427.	24
12	0	0	0	0	0	4	202	405	694	1173	887	1618	1595	1553	1274#	1271#	1058	619	357	72	0	0	0	0	12938.	$22
13	0	0	0	0	0	5	224	588	956	1043	1068	1261	1141	1083$	1024	1423	853	620	193	55	0	0	0	0	11536.	24
14	0	0	0	0	0	12	175	282	317	351	408	469	756	991	1084	1029%	844	639	375	87	0	0	0	0	7818.	24
15	0	0	0	0	0	10	182	534	832	1091	936	1089	1168	1224	975	821	683	374	212	22	0	0	0	0	10152.	24
16	0	0	0	0	0	6	208%	423%	454	611	640	752	867	739	607	651	627	668	348	58	0	0	0	0	7660.	24
17	0	0	0	0	0	7	232%	535%	772	1041	1271	1445	1505$	1585	1357	1236	913	606	384	107	0	0	0	0	12975.	24
18	0	0	0	0	0	3	74	278	539	1009	1343	1805	1980	1907	1577	1345	928	656	140	15	0	0	0	0	13599.	24
19	0	0	0	0	0	3	83	573	866	1252	797	1093	1544	1581	1636	1454	799	690	307	34	0	0	0	0	12712.	24
20	0	0	0	0	0	1	59	147	191	294	463	857	1456	1348$	1241	579	165	523	241	47	0	0	0	0	7611.	24
21	0	0	0	0	0	6	150	410%	838	1288	1549	1554	886	698	774	633	129	25	22	12	0	0	0	0	8974.	24
22	0	0	0	0	0	1	39	118	367	215	114	151	539	1351	1936	1481	1211	753	488	86	0	0	0	0	8851.	24
23	0	0	0	0	0	1	49	393	470	858	1379	1619	1461	1882	1779	1367	1117	693	454	98	0	0	0	0	13640.	24
24	0	0	0	0	0	1	72	508	879$	1249	1512	1465	1935	1615	416	285	573	762	300	35	0	0	0	0	11606.	24
25	0	0	0	0	0	1	123	383	749	1104	1034	745	760	1380	1477	1558	704	234	93	14	0	0	0	0	10336.	24
26	0	0	0	0	0	2	239	477	745	1207	1663	1377	1172	1462	1856	1557	1286	870	265	50	0	0	0	0	13846.	24
27	0	0	0	0	0	1	195	532	668	1224	1218	1467%	974	979	1217$	1455	1139	861	414	53	0	0	0	0	12197.	24
28	0	0	0	0	0	2	122	286	385	557	793	831	802	1014	950	839	560	454	269	40	0	0	0	0	7933.	24
29	0	0	0	0	0	5	126	491	1043	1169	1255	1387	1233	1261	1178	1027	844	581	292	35	0	0	0	0	11928.	24
30	0	0	0	0	0	1	175%	440%	502	644	1119	1132	1339	1198%	1078	844	829	477	173	16	0	0	0	0	9768.	24
31	0	0	0	0	0	2	95	324%	550	859	1084	1231	1236$	1240	933	650	518	315	184%	37	0	0	0	0	9239.	24
AV	0	0	0	0	0	6	145	380	586	829	983	1066	1085$	1179$	1092$	975$	749$	512$	255$	47	0	0	0	0	9900.$	
HR	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29	29	30	30	30	31	31	31	31	31		735

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-30

ATLANTA (GA TECH) YEAR 1979 MONTH 7

LAT. TILTED KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	18	134	613	1367	2093	2736	3188	3353	3139	2821	2114	1272	674	264	84	0	0	0	0	23858.	24
2	0	0	0	0	0	22	158	538	1170	1946	2622	2682	3283	2868	2709	2049	1394	509	259	49	0	0	0	0	22257.	24
3	0	0	0	0	0	27	258	464	907	1053	2547	2998	2664	2771	2357	795	1587	789	333	22	0	0	0	0	19572.	24
4	0	0	0	0	0	8	190	582	1195	1788	2401	3056	2866	3120	2334	2198	1565	854	301	74	0	0	0	0	22530.	24
5	0	0	0	0	0	8	185	411	1294	1009	1902	1817	2887	1878	1494	1576	1007	935	367	68	0	0	0	0	16818.	24
6	0	0	0	0	0	15	162	557	375	1008	2028	1792	1076#	9999#	9999#	9999#	9999#	242#	64#	9	0	0	0	0	99999.#	17
7	0	0	0	0	0	2	28	77	97	189	279	352	377	445	632	665	995	255	78	10	0	0	0	0	4479.	24
8	0	0	0	0	0	2	48	121	155	217	282	285	251	318	373	262	275	125	56	5	0	0	0	0	2774.	24
9	0	0	0	0	0	2	37	107	147	131	236	287	384	460	426	272	198	151	18	3	0	0	0	0	2860.	24
10	0	0	0	0	0	2	43	159	244$	330	515	516	594	523	422	407	298	162	99	18	0	0	0	0	4331.	24
11	0	0	0	0	0	9	124	373	863	1007	1182	996	1081	849	816	881	463	347	128	21	0	0	0	0	9139.	24
12	0	0	0	0	0	2	155	340	637	1263	845	1938	2207	2252	2277#	1945#	1674	743	330	57	0	0	0	0	15954.$	22
13	0	0	0	0	0	6	187	501	965	1579	2274	2379	3267	3020$	2774	1775	1454	864	158	45	0	0	0	0	21309.	24
14	0	0	0	0	0	12	158	503	1292	2029	2872	3128	3113	2347	2449	1696	1369	816	404	70	0	0	0	0	22054.	24
15	0	0	0	0	0	11	136	539	706	1435	2432	2923	3075	2845	2768	1990	1492	901	262	16	0	0	0	0	21533.	24
16	0	0	0	0	0	7	146	582	1300	2027	2656	3088	3295	3194	2898	2371	1512	980	322	41	0	0	0	0	24420.	24
17	0	0	0	0	0	8	162	571	1232	1924	2533	2862	2904$	2946	2309	2341	1624	945	384	78	0	0	0	0	22822.	24
18	0	0	0	0	0	3	70	230	453	884	1166	1598	1908	2581	2891	1961	1186	650	95	10	0	0	0	0	15491.	24
19	0	0	0	0	0	2	70	495	774	1092	659	998	1437	1359	2074	1667	802	658	256	26	0	0	0	0	12370.	24
20	0	0	0	0	0	1	65	137	162	245	394	740	1304	1321$	1338	627	128	504	202	37	0	0	0	0	7207.	24
21	0	0	0	0	0	5	115	384	1091	1588	1654	1712	937%	653	1482	767	112	25	27	12	0	0	0	0	10565.	24
22	0	0	0	0	0	1	39	108	323	187	90	127	516	1266	2486	2189	1459	911	418	89	0	0	0	0	10187.	24
23	0	0	0	0	0	1	54	354	407	1316	2676	2504	2267	2310	2409	1490	1060	597	382	82	0	0	0	0	17909.	24
24	0	0	0	0	0	2	71	429	821$	1213	1588	1357	2548	2126	365	275	581	707	251	28	0	0	0	0	12362.	24
25	0	0	0	0	0	2	115	322	648	975	918	654	661	1330	1345	1486	647	219	92	22	0	0	0	0	9435.	24
26	0	0	0	0	0	9	207	424	628	1052	1556	1203	1081	1346	1490	1451	1347	589	233	52	0	0	0	0	12668.	24
27	0	0	0	0	0	8	177	548	1111	1582	2276	2352	1271	1005	1536$	2068	1295	673	369	48	0	0	0	0	16320.	24
28	0	0	0	0	0	2	105	507	1380	2063	2484	3014	2983	2565	2640	2377	1659	932	286	32	0	0	0	0	23030.	24
29	0	0	0	0	0	7	131	514	1094	1404	1841	1971	2161	2340	2471	1598	1480	811	297	26	0	0	0	0	18146.	24
30	0	0	0	0	0	2	124	571	1253	1950	2102	1911	2980	2573	2293	2244	1542	558	151	21	0	0	0	0	20275.	24
31	0	0	0	0	0	9	110	436	1293	2024	2239	2519	2709$	2898	2695	2287	1639	939	278	30	0	0	0	0	22105.	24
AV	0	0	0	0	0	0	7	121	405	819	1245	1671	1837	2012$	1955$	1893$	1513$	1104$	827$	237$	38	0	0	0	0	15483.$	
HR	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29	29	30	30	30	31	31	31	31	31		735

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
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OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-31

ATLANTA (GA TECH) YEAR 1979 MONTH 7

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	1	10	50	87	124	157	182	189	174	156	121	77	42	16	3	0	0	0	0	1398.	24
2	0	0	0	0	0	1	14	43	74	110	145	151	175	158	145	109	70	35	19	3	0	0	0	0	1259.	24
3	0	0	0	0	0	1	10	33	57	66	137	161	144	142	118	50	86	47	23	2	0	0	0	0	1062.	24
4	0	0	0	0	0	1	14	42	76	106	137	171	165	173	135	120	91	57	26	5	0	0	0	0	1319.	24
5	0	0	0	0	0	1	15	35	78	68	114	109	156	113	89	91	65	50	27	4	0	0	0	0	1024.	24
6	0	0	0	0	0	1	14	39	27	69	121	114	78M	9999M	9999M	9999M	9999M	17M	4M	1	0	0	0	0	99999.	M17
7	0	0	0	0	0	0	1	5	8	16	24	30	32	37	50	51	66	20	4	1	0	0	0	0	345.	24
8	0	0	0	0	0	0	1	8	12	19	25	25	23	31	33	23	24	9	3	0	0	0	0	0	236.	24
9	0	0	0	0	0	0	2	9	12	11	21	27	36	44	39	24	16	11	1	0	0	0	0	0	254.	24
10	0	0	0	0	0	0	2	9	18$	27	45	44	49	43	37	31	23	11	6	1	0	0	0	0	346.	24
11	0	0	0	0	0	0	6	25	60	73	88	79	88	67	55	63	36	25	9	1	0	0	0	0	677.	24
12	0	0	0	0	0	0	10	23	43	87	62	127	141	140	125M	113M	95	48	24	3	0	0	0	0	1018.	822
13	0	0	0	0	0	0	10	37	62	92	133	134	178	164$	150	104	83	52	15	2	0	0	0	0	1218.	24
14	0	0	0	0	0	0	9	41	85	123	157	180	177	140	136	100	76	46	25	4	0	0	0	0	1300.	24
15	0	0	0	0	0	0	13	39	56	92	140	163	167	151	146	111	85	58	23	3	0	0	0	0	1246.	24
16	0	0	0	0	0	0	12	42	80	116	150	171	180	173	157	127	86	54	21	3	0	0	0	0	1374.	24
17	0	0	0	0	0	0	12	39	72	105	135	150	149$	148	121	115	65	54	23	3	0	0	0	0	1211.	24
18	0	0	0	0	0	0	2	15	32	56	77	99	114	137	135	99	66	36	5	0	0	0	0	0	874.	24
19	0	0	0	0	0	0	2	31	50	75	51	71	95	95	128	103	54	41	17	1	0	0	0	0	815.	24
20	0	0	0	0	0	0	3	9	13	20	32	56	94	90$	85	40	10	29	13	2	0	0	0	0	497.	24
21	0	0	0	0	0	0	9	31	74	103	107	103	57	50	93	49	8	1	1	0	0	0	0	0	685.	24
22	0	0	0	0	0	0	1	8	24	15	7	10	37	87	147	125	83	54	24	2	0	0	0	0	623.	24
23	0	0	0	0	0	0	3	25	30	91	152	145	136	138	138	92	66	38	21	3	0	0	0	0	1077.	24
24	0	0	0	0	0	0	3	27	53$	79	102	94	151	133	29	19	35	43	15	1	0	0	0	0	784.	24
25	0	0	0	0	0	0	6	21	44	65	64	50	51	94	92	91	41	14	4	0	0	0	0	0	637.	24
26	0	0	0	0	0	0	10	25	42	71	97	82	71	87	94	87	77	37	13	1	0	0	0	0	794.	24
27	0	0	0	0	0	0	8	32	69	97	127	131	78	68	89$	110	73	40	19	2	0	0	0	0	943.	24
28	0	0	0	0	0	0	9	39	81	116	137	168	169	145	145	124	89	54	21	2	0	0	0	0	1299.	24
29	0	0	0	0	0	0	5	32	65	83	107	111	122	128	129	88	74	43	18	2	0	0	0	0	1006.	24
30	0	0	0	0	0	0	9	34	64	96	106	106	147	129	112	105	76	32	7	1	0	0	0	0	1025.	24
31	0	0	0	0	0	0	6	32	71	102	116	131	138$	144	135	117	83	51	20	2	0	0	0	0	1148.	24
AV	0	0	0	0	0	0	8	28	52	77	99	109	117$	114$	108$	86$	64$	38$	15$	2	0	0	0	0	917.	$
HR	31	31	31	31	31	31	31	31	31	31	31	31	30	30	28	29	30	30	30	31	31	31	31	31		735

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-32

ATLANTA (GA TECH) YEAR 1979 MONTH 7

AVAILABLE SUNSHINE %

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	8	98	100	100	100	100	100	100	100	100	100	55	10	0	0	0	0	0	0	75.	24
2	0	0	0	0	0	0	25	80	100	100	100	92	100	95	98	73	80	0	0	0	0	0	0	0	66.	24
3	0	0	0	0	0	0	17	17	18	3	93	100	77	80	83	13	88	85	75	0	0	0	0	0	52.	24
4	0	0	0	0	0	0	0	65	92	88	98	98	83	97	73	90	88	90	72	27	0	0	0	0	75.	24
5	0	0	0	0	0	0	25	32	93	0	38	25	85	32	30	47	43	88	37	0	0	0	0	0	41.	24
6	0	0	0	0	0	0	0	0	0	0	7	2	0	0	0	0	0	0	0	0	0	0	0	0	1.	24
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0.	24
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0.	24
12	0	0	0	0	0	0	0	2	5	25	2	30	42	58	80	0	77	45	70	0	0	0	0	0	30.	24
13	0	0	0	0	0	0	0	25	22	58	82	65	95	90	95	37	77	92	0	0	0	0	0	0	52.	24
14	0	0	0	0	0	0	0	52	100	100	100	100	93	65	80	58	88	73	100	17	0	0	0	0	72.	24
15	0	0	0	0	0	0	58	48	7	38	88	93	90	87	95	80	82	100	80	0	0	0	0	0	67.	24
16	0	0	0	0	0	0	43	100	100	100	100	98	97	100	100	100	90	100	50	0	0	0	0	0	84.	24
17	0	0	0	0	0	0	3	100	100	100	100	93	100	87	72	100	100	100	67	0	0	0	0	0	80.	24
18	0	0	0	0	0	0	0	0	0	0	0	0	5	53	92	77	62	20	0	0	0	0	0	0	22.	24
19	0	0	0	0	0	0	0	2	13	7	0	0	0	0	40	27	5	7	2	0	0	0	0	0	7.	24
20	0	0	0	0	0	0	0	0	0	0	0	0	0	100	13	8	0	0	0	0	0	0	0	0	8.	24
21	0	0	0	0	0	0	0	8	53	43	28	18	7	2	35	10	0	0	0	0	0	0	0	0	15.	24
22	0	0	0	0	0	0	0	0	0	0	0	0	0	2	45	67	37	60	32	0	0	0	0	0	17.	24
23	0	0	0	0	0	0	0	0	0	37	85	60	63	42	83	15	0	0	53	7	0	0	0	0	32.	24
24	0	0	0	0	0	0	0	2	30	8	12	3	45	42	0	0	0	2	0	0	0	0	0	0	10.	24
25	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	2	0	0	0	0	0	0	0	0	1.	24
26	0	0	0	0	0	0	20	0	0	0	2	0	0	0	0	0	17	2	0	0	0	0	0	0	3.	24
27	0	0	0	0	0	0	0	5	85	40	75	63	17	7	34%	62	27	17	0	0	0	0	0	0	31.	24
28	0	0	0	0	0	0	12	100	100	100	85	95	83	72	83	93	97	100	80	0	0	0	0	0	78.	24
29	0	0	0	0	0	0	0	28	32	32	57	37	52	55	82	47	78	78	68	0	0	0	0	0	47.	24
30	0	0	0	0	0	0	32	100	100	100	72	47	85	75	78	93	90	33	0	0	0	0	0	0	66.	24
31	0	0	0	0	0	0	0	48	100	90	70	68	100	85	92	95	93	100	100	24	0	0	0	0	77.	24
AV	0	0	0	0	0	1	11	29	41	38	45	41	46	47	53	43	45	40	28	3	0	0	0	0	34.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
& - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

GT 3% ERROR IN MONTHLY AVG:
DAILY AVG = Y 36%

TABLE A-33

ATLANTA (GA TECH) YEAR 1979 MONTH 8

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	5	676	1851	2148	2286	1277	1805	2225	2610	3033	2627	1039	1345	846	40	0	0	0	0	23814.	24
2	0	0	0	0	0	1	372	438	876	1623	2163	2897	2708	2760	2517	2048	2110	1654	788	14	0	0	0	0	22968.	24
3	0	0	0	0	0	1	692	1768	2265	2314	2617	2766	1406	1154$	901	1810	1568	972	841	105	0	0	0	0	21180.	24
4	0	0	0	0	0	1	767	1849	2442	2755	2849	2697	2426	1832	2079	2167	1868	1314	680	30	0	0	0	0	25756.	24
5	0	0	0	0	0	0	397	1366	1961	2235	2341	2134	2450	2057	1869	2178	2077	1713	741	76	0	0	0	0	23594.	24
6	0	0	0	0	0	0	246	962	1456	1723	1830	2017	2093	2303	2075	2249	1991	1401	710	45	0	0	0	0	21101.	24
7	0	0	0	0	0	0	345	1174	1709	1961	2100	2290	2390	2271$	2151	1971	1624	1266	638	22	0	0	0	0	21912.	24
8	0	0	0	0	0	0	183	781	1207	1546	1616	1626	770	101	591	1350	1283	811	302	11	0	0	0	0	12178.	24
9	0	0	0	0	0	0	156	678	938	1188	1305	1280	571	74	208	3	3	33	3	2	0	0	0	0	6444.	24
10	0	0	0	0	0	0	0#9999#	9999#	1211#	1360	1519	1580	1573	897	1378	212	3	3	39	5	0	0	0	0	99999.#	20
11	0	0	0	0	0	0	11	4	300	732	1244	558	9	3	82	1088	3	3	3	2	0	0	0	0	4040.	24
12	0	0	0	0	0	0	3	3	29	162	721	1459	2039	2255	2129	2779	1833	1468	1181	106	0	0	0	0	18146.	24
13	0	0	0	0	0	0	149	1023	1507	2431	1032	261#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.#	15
14	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	616#	964	132	17	0	0	0	0	99999.#	13
15	0	0	0	0	0	0	407	1390	2063	2450	2635	2732	2704	2587	2361	1233	1382	1043	217	21	0	0	0	0	23224.	24
16	0	0	0	0	0	0	3	38	441	653	87	52	16	1135	1462	1545	1136	394	260	2	0	0	0	0	7224.	24
17	0	0	0	0	0	0	3	3	3	151	152	973	301	844	936	629$	322	52	5	1	0	0	0	0	4376.	24
18	0	0	0	0	0	0	75	322	400	845	658	1257	999	568	1519	1256	1227	826	336	9	0	0	0	0	10095.	24
19	0	0	0	0	0	0	235	1139	1699	2003	2210	2466	2400	1367	1607	1711	1688	934	501	7	0	0	0	0	19966.	24
20	0	0	0	0	0	0	237	1034	734	1788	2272	2018	405	852	1857	2009	1655	675	88	1	0	0	0	0	15605.	24
21	0	0	0	0	0	0	79	19	863	1094$	1325	1691	1532	1958	1420	1613	1191	534	220	1	0	0	0	0	13539.	24
22	0	0	0	0	0	0	183	603	188	78	1515	532	1362	699	3	3	104	384	17	1	0	0	0	0	5630.	24
23	0	0	0	0	0	0	3	3	3	12	26	424	687	3	500	1418	183	1292	310	1	0	0	0	0	4862.	24
24	0	0	0	0	0	0	3	3	3	218	518	3	840	2247	1228	3	3	10	101	1	0	0	0	0	5177.	24
25	0	0	0	0	0	0	2	3	3	3	8	51	84	262	4	733	357	3	3	1	0	0	0	0	1513.	24
26	0	0	0	0	0	0	2	3	3	3$	3	11	769	579	13	144#	2#	3	3	1	0	0	0	0	1694.	$22
27	0	0	0	0	0	0	2	4#	9999#	9999#	15#	361	834	1183	1839	1193	428	1097	283	1	0	0	0	0	99999.#	20
28	0	0	0	0	0	0	118	556	221	1116	1263	2349	2430	1892	210	456	431	3	3	1	0	0	0	0	11067.	24
29	0	0	0	0	0	0	117	1308	2018	2173	685	775	246	3	2074	2304	1467	1571	604	0	0	0	0	0	15344.	24
30	0	0	0	0	0	0	289	1345	1100	1616	1319	2057	1440	939	575	1305	201	196	3#	0#	0	0	0	0	12733.	$22
31	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.#	10
AV	0	0	0	0	0	0	0$	205$	728$	984$	1298$	1332$	1459$	1340$	1265$	1308$	1403$	1008$	757$	351$	19$	0	0	0	13455.	$
HR	31	31	31	31	31	30	28	27	27	28	28	28	28	28	28	27	27	29	28	28	31	31	31	31		698

FLAGS:
X - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
- BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-34

ATLANTA (GA TECH) YEAR 1979 MONTH 8

DIRECT (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	6	572	1385	1500	1574	890	1282	1561	1712	1932	1732	750	1073	764	42	0	0	0	0	16775.	24
2	0	0	0	0	0	1	341	333	611	1086	1398	1845	1747	(779	1629	1389	1510	1298	722	17	0	0	0	0	15705.	24
3	0	0	0	0	0	2	802	1314	(558	1535	1721	1783	946	788$	631	1291	1155	778	756	111	0	0	0	0	14970.	24
4	0	0	0	0	0	1	644	1325	1619	1780	(830	1730	1585	1228	1406	1482	1368	1053	620	32	0	0	0	0	17703.	24
5	0	0	0	0	0	1	367	1075	1400	1546	1609	1437	1654	1394	1276	1499	1476	1313	883	84	0	0	0	0	16817.	24
6	0	0	0	0	0	1	240	838	1178	1333	(380	1471	1481	1596	1438	1592	1461	1136	660	53	0	0	0	0	15857.	24
7	0	0	0	0	0	1	335	986	(321	1452	1521	1620	1667	1607$	1546	1459	1272	1061	606	30	0	0	0	0	16484.	24
8	0	0	0	0	0	(	187	706	1016	1229	1272	1255	623	91	501	1089	1067	745%	310	16	0	0	0	0	10107.	24
9	0	0	0	0	0	1	158	622	824%	1000%	1072%	(044%	465	88	185	5	5	37	5	3	0	0	0	0	5492.	24
10	0	0	0	0	0	0	N9999	N9999	N	986	N1061	(154	1183	1173	696	1114%	183	5	5	43	7	0	0	0	99999.	N20
11	0	0	0	0	0	0	15	6	245	559	928	387	11	5	59	753	5	5	5	3	0	0	0	0	2987.	24
12	0	0	0	0	0	0	5	5	21	(02	450	916	1299	1459	1403	1860	1292	1111	1007	110	0	0	0	0	11040.	24
13	0	0	0	0	0	0	135	787	1057	1625	666	186N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	0	0	0	0	99999.	N15
14	0	0	0	0	0	0	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	501N	815	138	20	0	0	0	99999.	N13
15	0	0	0	0	0	0	374	(124	1513	1695	1773	1818	1802	1744	1636	890	1063	872	221	24	0	0	0	0	16549.	24
16	0	0	0	0	0	0	5	33	330	463	63	38	13	796	1041	1145	900	327	251	4	0	0	0	0	5409.	24
17	0	0	0	0	0	0	9	5	5	116	(13	695	211	588	676	468$	261	49	8	2	0	0	0	0	3207.	24
18	0	0	0	0	0	0	72	283	316	490	476	889	721	411	1113	980	1020	742	336	11	0	0	0	0	7860.	24
19	0	0	0	0	0	0	211	924	1263	1425	1516	1676	(856	985	1178	1287	(282	781	473	(0	0	0	0	0	14665.	24
20	0	0	0	0	0	0	222	854	547	1232	(558	1361	278	585	(249	1396	1266	611	90	2	0	0	0	0	11247.	24
21	0	0	0	0	0	0	80	20	695	819$	944	1193	1067	1344	1061	1258	990	502	221	2	0	0	0	0	10197.	24
22	0	0	0	0	0	0	163	526	123	52	1081	365	952	508	5	5	84	328	20	2	0	0	0	0	4214.	24
23	0	0	0	0	0	0	5	5	5	10	19	279	447	5	277%	942	136	997	264	1	0	0	0	0	3392.	24
24	0	0	0	0	0	0	5	5	5	(49	348	5	9N	1436N	806	6	6	9	85	2	0	0	0	0	1743.	$22
25	0	0	0	0	0	0	5	6	6	6	7	34	51	167	8	488	244	6	6	2	0	0	0	0	1033.	24
26	0	0	0	0	0	0	5	6	6	6$	6	9	523	392	12	121N	6N	6	6	1	0	0	0	0	1193.	$22
27	0	0	0	0	0	0	5	8N	9999N	9999N	11N	227	419	799	1288	841	339	944	278	1	0	0	0	0	99999.	N20
28	0	0	0	0	0	0	110	462	179	832	916	1610	(599	(225	143	318	314	5	6	1	0	0	0	0	7720.	24
29	0	0	0	0	0	0	111	(043	(455	(509	475	538	(76	6	1429	1634	1084	1244	554	1	0	0	0	0	11259.	24
30	0	0	0	0	0	0	280	1100	831	(158	925	(401	992	695	442	544N	5N	11N	6N	1N	0	0	0	0	99999.	N19
31	0	0	0	0	0	0	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	9999N	0	0	0	0	99999.	N10
AV	0	0	0	0	0	0$	188$	584$	727$	923$	932$	1003$	930$	840$	910$	1000$	783$	638$	326$	21$	0	0	0	0	9806.	$
HR	31	31	31	31	31	30	28	27	27	28	28	28	27	27	28	26	26	28	28	28	31	31	31	31		693

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
N - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-35

ATLANTA (GA TECH) YEAR 1979 MONTH 8

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	1	242	906	1571	2254	2060	3096	3443	3264	3114	2652	1268	1055	448	18	0	0	0	0	25392.	24
2	0	0	0	0	0	1	164	567	1216	2066	2655	3268	3334	3310	2856	2297	1827	1107	375	6	0	0	0	0	25049.	24
3	0	0	0	0	0	1	175	795	1495	2086	2732	3320	2697	2281$	1865	2332	1722	923	403	22	0	0	0	0	22849.	24
4	0	0	0	0	0	1	183	805	1557	2239	2823	3168	3151	2735	2720	2349	1760	1015	334	10	0	0	0	0	24849.	24
5	0	0	0	0	0	0	147	743	1481	2175	2733	3001	3353	3078	2588	2391	1832	1123	378	18	0	0	0	0	25041.	24
6	0	0	0	0	0	0	135	690	1366	1998	2556	3022	3086	3199	2712	2404	1801	1037	356	12	0	0	0	0	24375.	24
7	0	0	0	0	0	0	143	702	1402	2037	2570	3033	3281	3104$	2926	2439	1807	984	340	8	0	0	0	0	24776.	24
8	0	0	0	0	0	0	122	637	1288	1948	2424	2822	2066	1130	1685	2113	1600	878	279	7	0	0	0	0	18998.	24
9	0	0	0	0	0	0	118	614	1231	1877	2377	2676	1897	1005	1139	472	393	296	88	2	0	0	0	0	14184.	24
10	0	0	0	0	0	0	0#	9999#	9999#	1531#	1974	2475	2942	2985	2286	2807	1049	357	302	134	12	0	0	0	99999.	#20
11	0	0	0	0	0	0	113	227	1006	1759	2527	1877	400	293	1119	1956	27%	150	60	2	0	0	0	0	11536.	24
12	0	0	0	0	0	0	55	277	700	1201	2123	2896	3232	3224	2801	2652	1739	1023	385	11	0	0	0	0	22319.	24
13	0	0	0	0	0	0	116	760	1394	2229	1988	1514#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.	#15
14	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	1050#	964	197	4	0	0	0	99999.	#13
15	0	0	0	0	0	0	136	728	1470	2156	2711	3093	3261	3163	2854	1948	1680	926	197	6	0	0	0	0	24329.	24
16	0	0	0	0	0	0	40	371	1120	1831	1475	1486	1700	2855	2805	2315	1816	791	283	6	0	0	0	0	18677.	24
17	0	0	0	0	0	0	41	195	491	1249	1426	2459	2157	2634	2409	1718$	1028	493	145	1	0	0	0	0	16448.	24
18	0	0	0	0	0	0	89	561	1068	1568	1877	2747	2415	1769	2647	2258	1751	913	223	2	0	0	0	0	19885.	24
19	0	0	0	0	0	0	94	635	1361	2070	2764	3088	3184	2449	2841	2214	1636	762	246	2	0	0	0	0	23147.	24
20	0	0	0	0	0	0	114	700	920	1959	2656	2854	1753	2385	2702	2331	1600	734	115	1	0	0	0	0	20825.	24
21	0	0	0	0	0	0	65	249	1042	1690$	2337	2773	2704	3000	2474	2238	1426	735	201	1	0	0	0	0	20937.	24
22	0	0	0	0	0	0	110	692	923	1343	2478	2456	2933	1887	360	364	638	589	46	1	0	0	0	0	14823.	24
23	0	0	0	0	0	0	28	121	321	785	1277	2027	1977	111	1742	1204$	666	960	207	1	0	0	0	0	11428.	24
24	0	0	0	0	0	0	19	128	137	1209	1748	361	1793	3093	2043	451	476	399	121	1	0	0	0	0	11979.	24
25	0	0	0	0	0	0	29	209	553	941	1236	1353	1745	1696	596	1083	889	8%	3	1	0	0	0	0	10142.	24
26	0	0	0	0	0	0	22	334	514	611$	709	1417	2441	1897	486	850#	79#	351	91	1	0	0	0	0	10594.	$22
27	0	0	0	0	0	0	82	127#	9999#	9999#	1369#	1864	2067	2265	2617	1748	974	934	173	1	0	0	0	0	99999.	#20
28	0	0	0	0	0	0	73	655	712	1933	2493	2956	3047	2777	1436	1452	941	55	27	1	0	0	0	0	18557.	24
29	0	0	0	0	0	0	61	621	1309	1893	1305	1546	1075	552	2637	2223	1231	794	172	1	0	0	0	0	15420.	24
30	0	0	0	0	0	0	100	699	1188	1917	2009	2815	2380	1829	1282	1894	641	580	258#	0#	0	0	0	0	17538.	$22
31	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.	#10
AV	0	0	0	0	0	0$	100$	542$	1088$	1750$	2162$	2515$	2484$	2260$	2145$	1872$	1227$	720$	215$	88	0	0	0	0	19066.	$
HR	31	31	31	31	31	30	28	27	27	28	28	28	28	28	28	27	27	29	28	28	31	31	31	31		698

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-36

ATLANTA (GA TECH) YEAR 1979 MONTH 8

GLOBAL (RQ630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	1	138	548	916	1309	1181%	1797	2006	1878	1777	1523	685%	613	251	6	0	0	0	0	14628.	24
2	0	0	0	0	0	1	81	314	704	1205	1544	1887	1927	1907	1627	1311	1065	643	206	3	0	0	0	0	14425.	24
3	0	0	0	0	0	1	97	476	884	1221	1606	1929	1548%	1290$	1032%	1335	999%	519	221	7	0	0	0	0	13166.	24
4	0	0	0	0	0	1	100	478	902	1297	1626	1817	1806	1558	1566	1339	1010	583	174	3	0	0	0	0	14258.	24
5	0	0	0	0	0	1	80	442	864	1261	1577	1714	1925	1764	1513%	1402	1050	646	200	5	0	0	0	0	14443.	24
6	0	0	0	0	0	1	70	414	820	1198	1505	1769	1804	1844	1548	1396	1039	600	191	4	0	0	0	0	14204.	24
7	0	0	0	0	0	1	79	428	841	1222	1535	1788	1919	1818$	1718	1427	1066	572	183	3	0	0	0	0	14598.	24
8	0	0	0	0	0	0	65	386	782	1173	1466	1704	1210%	580%	973%	1246	948	517	148	3	0	0	0	0	11200.	24
9	0	0	0	0	0	0	63	372	747	1137	1434	1622	1098%	525%	641	241	194	147	21	2	0	0	0	0	8245.	24
10	0	0	0	0	0	0	0#9999#	9999#	913#	1170	1455	1739	1746	1325%	1696	554%	167	150	62	5	0	0	0	0	99999.	#20
11	0	0	0	0	0	0	62	113	579	1028	1468	1039%	180	132	620	1134	14%	67	38	2	0	0	0	0	6474.	24
12	0	0	0	0	0	0	37	156	394	677	1221	1669	1872	1866	1623	1550	1014	603	229	5	0	0	0	0	12916.	24
13	0	0	0	0	0	0	73	462	825	1314	1141	850#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.	#15
14	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9990#	9999#	9999#	9999#	9999#	579#	583	96	2	0	0	0	0	99999.	#13
15	0	0	0	0	0	0	91	454	903	1298	1616	1823	1903	1843	1655	1112%	981	540	99	3	0	0	0	0	14320.	24
16	0	0	0	0	0	0	29	212	653	1075	849	649	972	1670	1645	1368	966	465	153	3	0	0	0	0	10909.	24
17	0	0	0	0	0	0	33	122	289	723	819	1454	1224	1537	1420	1012$	603	280	78	2	0	0	0	0	9595.	24
18	0	0	0	0	0	0	63	352	638	916	1097	1627	1395	990%	1575	1356	1062	552	121	2	0	0	0	0	11746.	24
19	0	0	0	0	0	0	58	400	829	1241	1634	1817	1871	1421%	1558%	1312	957	440	135	1	0	0	0	0	13673.	24
20	0	0	0	0	0	0	70	439	541	1168	1567	1673	1003	1383	1573	1360	947	430	57	1	0	0	0	0	12211.	24
21	0	0	0	0	0	0	42	136	638	1009$	1381	1628	1567	1746	1433	1330	846	431	107	1	0	0	0	0	12295.	24
22	0	0	0	0	0	0	71	433	536	773	1444	1417	1707	1084	160	178	350	357	27%	1	0	0	0	0	8538.	24
23	0	0	0	0	0	0	15	57	155	425	692%	1118	1083	44	979	1167	361	562	110	1	0	0	0	0	8769.	24
24	0	0	0	0	0	0	8	66	56	665	969	157	997	1770	1151	212	229	202	59	1	0	0	0	0	6542.	24
25	0	0	0	0	0	0	13	110	298	517	871	737	956	931	301	611	385	4	4	1	0	0	0	0	5538.	24
26	0	0	0	0	0	0	9	168	263	312$	361	765	1368	1048	220	478#	23#	177	41	1	0	0	0	0	5660.	$22
27	0	0	0	0	0	0	29	54#	9999#	9999#	769#	1073	1201	1301	1542	1013	546	568	97	1	0	0	0	0	99999.	#20
28	0	0	0	0	0	0	40	392	408	1136	1464	1725	1738	1587	800	817	533	21	9	1	0	0	0	0	10670.	24
29	0	0	0	0	0	0	22	359	787	1131	732%	886	800	275	1537	1314	697%	469	94	1	0	0	0	0	8901.	24
30	0	0	0	0	0	0	60	439	704	1147	1190	1657	1382%	1063%	719%	1151	311%	323	149#	0#	0	0	0	0	10256.	$22
31	0	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.	#10
AV	0	0	0	0	0	0$	57$	323$	628$	1027$	1259$	1460$	1429$	1292$	1236$	1103$	705$	416$	115$	2$	0	0	0	0	11051.	$
HR	31	31	31	31	31	30	28	27	27	28	28	28	28	28	28	27	27	28	28	28	31	31	31	31		698

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-37

ATLANTA (GA TECH) YEAR 1979 MONTH 8

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	1	178#	487#	525	728	1053	1474	1357	846	505	703	704	559	332	41	0	0	0	0	9261.	$22
2	0	0	0	0	0	2	186	479%	807	980	902	645	775	740	689	778	608	470	251	17	0	0	0	0	8307.	24
3	0	0	0	0	0	1	126#	406#	385	548	631	849	1412%	1275$	1138%	1022	834	572	282	38	0	0	0	0	9430.	$22
4	0	0	0	0	0	1	142#	380#	355	398	523	737	868	1045	959	764	683	534	241	19	0	0	0	0	7476.	$22
5	0	0	0	0	0	0	157#	488#	532	892	855	1104	1064	1195	1023	802	655	471	273	33	0	0	0	0	9129.	$22
6	0	0	0	0	0	0	155%	516%	883	878	1111	1238	1156	1098	979	780	878	529	262	28	0	0	0	0	10092.	24
7	0	0	0	0	0	0	162%	381$	601	762	913	1021	1098	1115$	1131	1030	916	538	267	26	0	0	0	0	9961.	24
8	0	0	0	0	0	0	139	465%	727	958	1167	1417	1399	1105%	1233	1178	910	616	277	23	0	0	0	0	11614.	24
9	0	0	0	0	0	0	141	503%	809	1126	1376	1592	1432%	1001%	1012	538	452	336	139	8	0	0	0	0	10462.	24
10	0	0	0	0	0	0	0#	9999#	9999#	892#	1100	1298	1571	1588	1521%	1702	946	407	341	185	21	0	0	0	99999.	#20
11	0	0	0	0	0	0	137	256	872	1310	1563	1419	437	323	1064	1138	86	183	114	5	0	0	0	0	8885.	24
12	0	0	0	0	0	0	75	298	701	1094	1538	1562	1299	1130	994	618	680	468	199	16	0	0	0	0	10671.	24
13	0	0	0	0	0	0	109	457	688	830	1184	1306#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.	#15
14	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	776#	618	222	11	0	0	0	0	99999.	#13
15	0	0	0	0	0	0	103	338	481	561	636	691	783	836	893	1081	940	572	211	13	0	0	0	0	8138.	24
16	0	0	0	0	0	0	81	385	911	1396	1439	1469	1710	1825	1571	1235	1028	873	262	16	0	0	0	0	13981.	24
17	0	0	0	0	0	0	55	223	520	1168	1335	1605	1893	1876	1683	1280$	897	518	184	7	0	0	0	0	13224.	24
18	0	0	0	0	0	0	104	559%	926%	1186	1408	1672	1545	1315%	1442	1425	1139	672	225	11	0	0	0	0	13628.	24
19	0	0	0	0	0	0	113	354#	744#	813	1061	959	1021	1287%	1368	1069	785	492	215	10	0	0	0	0	10149.	$22
20	0	0	0	0	0	0	136	402#	699#	885	902	1127	1419	1656	1198	971	752	554	150	2	0	0	0	0	10814.	$22
21	0	0	0	0	0	0	83	276	649	993	$1338	1343	1348	1301	1367	1176	847	609	217	3	0	0	0	0	11550.	24
22	0	0	0	0	0	0	122	580	866	1322	1297	2012	1725	1317%	417	402	814	474	59	1	0	0	0	0	11207.	24
23	0	0	0	0	0	0	46	152	347	803	1278	1656	1358	149	1371	1028%	606	548	177	2	0	0	0	0	9518.	24
24	0	0	0	0	0	0	37	156	168	1081	1383	408	1008%	1052	1022	494	509	419	131	2	0	0	0	0	7849.	24
25	0	0	0	0	0	0	47	233	576	966	1260	1339	1690	1491	641	880	517	38	5	1	0	0	0	0	9464.	24
26	0	0	0	0	0	0	38	363	544	639$	734	1425	1758	1401	518	761#	115#	381	121	1	0	0	0	0	9422.	$22
27	0	0	0	0	0	0	86	160#	9999#	9999#	1391#	1593	1555	1263	1181	950	796	819	172	2	0	0	0	0	99999.	#20
28	0	0	0	0	0	0	86	568%	663%	1220	1529	979	881	1122	1291	1192	730	102	62	1	0	0	0	0	10427.	24
29	0	0	0	0	0	0	76	350#	9999#	675#	822	924	893	589	1005	893	537	321	119	1	0	0	0	0	99999.	#21
30	0	0	0	0	0	0	117	388#	862#	938#	1033	1072	1128	1057	887	966#	574#	553%	283#	0#	0	0	0	0	99999.	#17
31	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.	#10
AV	0	0	0	0	0	0$	101$	378$	822$	931$	1128$	1246$	1271$	1140$	1081$	921$	703$	475$	191$	13$	0	0	0	0	10198.	$
HR	31	31	31	31	31	30	24	19	23	26	28	28	28	28	28	26	26	29	28	28	31	31	31	31		678

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-38

ATLANTA (GA TECH) YEAR 1979 MONTH 8

LAT. TILTED KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	2	163	630	1313	2034	1961	2904	3345	3190	3002	2458	1143	845	331	40	0	0	0	0	23359.	24
2	0	0	0	0	0	3	134	463	1088	1896	2545	3203	3270	3242	2783	2155	1637	881	266	11	0	0	0	0	23577.	24
3	0	0	0	0	0	1	98	543	1255	1920	2614	3235	2603	2192$	1781	2190	1498	775	287	29	0	0	0	0	21019.	24
4	0	0	0	0	0	1	99	545	1297	2046	2707	3134	3145	2693	2651	2227	1592	828	248	13	0	0	0	0	23226.	24
5	0	0	0	0	0	1	101	538	1261	2011	2640	2956	3348	3063	2549	2287	1667	912	275	24	0	0	0	0	23632.	24
6	0	0	0	0	0	1	109	527	1172	1862	2481	3007	3099	3202	2673	2300	1637	859	262	18	0	0	0	0	23207.	24
7	0	0	0	0	0	0	105	527	1216	1905	2505	3023	3310	3106$	2903	2350	1654	827	259	16	0	0	0	0	23707.	24
8	0	0	0	0	0	0	106	506	1138	1828	2357	2803	2048	1134	1690	2051	1484	765	241	14	0	0	0	0	18165.	24
9	0	0	0	0	0	0	105	498	1094	1761	2321	2638	1891	1025	1131	497	416	287	110	3	0	0	0	0	13777.	24
10	0	0	0	0	0	0	M9999	M9999	M1368	M1872	2422	2896	2989	2280	2741	998	361	306	151	17	0	0	0	0	99999.	M20
11	0	0	0	0	0	0	114	206	895	1653	2444	1863	422	236	1020	1840	45	171	88	2	0	0	0	0	10999.	24
12	0	0	0	0	0	0	57	255	612	1094	1994	2821	3194	3222	2774	2564	1611	865	253	12	0	0	0	0	21330.	24
13	0	0	0	0	0	0	91	587	1186	2112	1890	1475	M9999	M9999	M9999	M9999	M9999	M9999	M9999	M9999	0	0	0	0	99999.	M15
14	0	0	0	0	0	0	M9999	M9999	M9999	M9999	M9999	M9999	M9999	M9999	M9999	M9999	M9999	946M	830	170	8	0	0	0	99999.	M13
15	0	0	0	0	0	0	93	557	1306	2061	2689	3122	3338	3232	2684	1900	1568	800	174	9	0	0	0	0	23734.	24
16	0	0	0	0	0	0	53	347	1022	1723	1352	1375	1547	2876	2818	2295	1523	709	225	10	0	0	0	0	17875.	24
17	0	0	0	0	0	0	47	186	438	1146	1317	2480	2172	2638	2402	1694$	987	460	147	4	0	0	0	0	16122.	24
18	0	0	0	0	0	0	85	483	971	1523	1828	2710	2465	1816	2658	2215	1646	819	197	6	0	0	0	0	19421.	24
19	0	0	0	0	0	0	78	518	1248	2018	2782	3215	3316	2535	2678	2219	1572	679	209	6	0	0	0	0	23073.	24
20	0	0	0	0	0	0	95	570	813	1901	2718	2959	1771	2360	2726	2353	1566	682	119	1	0	0	0	0	20635.	24
21	0	0	0	0	0	0	72	243	980	1667$	2335	2874	2800	3057	2531	2218	1390	682	198	1	0	0	0	0	21039.	24
22	0	0	0	0	0	0	104	597	847	1256	2507	2434	2942	1789	343	398	625	519	39	1	0	0	0	0	14400.	24
23	0	0	0	0	0	0	34	124	303	717	1148	1951	1955	130	1698	2010	624	848	173	1	0	0	0	0	11718.	24
24	0	0	0	0	0	0	30	129	134	1137	1667	333	1813	3227	2080	422	444	347	107	1	0	0	0	0	11872.	24
25	0	0	0	0	0	0	42	199	507	859	1108	1217	1621	1621	552	1164	707	28	4	1	0	0	0	0	9631.	24
26	0	0	0	0	0	0	31	310	469	554$	639	1273	2450	1850	454	795M	116M	352	95	1	0	0	0	0	10134.	$22
27	0	0	0	0	0	0	72	130M	9999M	9999M	1236M	1862	2098	2348	2687	1796	926	861	162	1	0	0	0	0	99999.	M20
28	0	0	0	0	0	0	69	594	664	1962	2559	3165	3270	2913	1380	1370	895	74	55	1	0	0	0	0	18970.	24
29	0	0	0	0	0	0	56	543	1238	1941	1335	1554	1025	432	2802	2373	1246	739	147	1	0	0	0	0	15432.	24
30	0	0	0	0	0	0	83	607	1096	1921	2108	2990	2534	1919	1364	1967	648	531	236M	0M	0	0	0	0	17951.	$22
31	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.	M10
AV	0	0	0	0	0	0$	83$	438$	947$	1658$	2106$	2500$	2492$	2262$	2134$	1863$	1152$	630$	178$	9$	0	0	0	0	18452.$	
HR	31	31	31	31	31	30	28	27	27	28	28	28	28	28	28	27	27	29	28	28	31	31	31	31		698

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
N - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-39

ATLANTA (GA TECH) YEAR 1979 MONTH 8

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	9	36	71	104	103	147	162	156	149	119	67	44	18	2	0	0	0	0	1188.	24
2	0	0	0	0	0	0	8	31	58	98	130	163	165	162	142	111	80	46	17	1	0	0	0	0	1213.	24
3	0	0	0	0	0	0	8	35	67	96	124	156	131	116$	101	108	74	42	18	2	0	0	0	0	1080.	24
4	0	0	0	0	0	0	8	36	72	107	137	157	157	137	129	111	79	45	17	1	0	0	0	0	1192.	24
5	0	0	0	0	0	0	8	34	69	104	133	152	165	151	128	114	83	48	18	1	0	0	0	0	1209.	24
6	0	0	0	0	0	0	7	31	59	86	117	142	149	152	131	109	78	43	16	1	0	0	0	0	1121.	24
7	0	0	0	0	0	0	7	31	61	88	110	136	148	138$	127	105	73	41	15	1	0	0	0	0	1080.	24
8	0	0	0	0	0	0	6	28	55	82	98	114	95	68	81	91	65	35	13	1	0	0	0	0	830.	24
9	0	0	0	0	0	0	6	27	53	80	99	109	85	59	56%	26	23	18	8	0	0	0	0	0	649.	24
10	0	0	0	0	0	0#	9999#	9999#	68#	90	115	134	138	106	113	61	28	19	7	0	0	0	0	0	99999.	#20
11	0	0	0	0	0	0	5	14	53	86	124	101	31	22	69	99	2%	8	4	0	0	0	0	0	619.	24
12	0	0	0	0	0	0	3	18	42	72	119	160	175	171	146	130	85	48	17	1	0	0	0	0	1186.	24
13	0	0	0	0	0	0	5	34	69	111	112	96#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.	#15
14	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	55#	40	12	0	0	0	0	0	99999.	#13
15	0	0	0	0	0	0	6	32	67	102	131	150	160	153	136	95	78	42	12	0	0	0	0	0	1162.	24
16	0	0	0	0	0	0	3	24	60	95	82	88	98	147	138	110	73	38	13	0	0	0	0	0	968.	24
17	0	0	0	0	0	0	2	11	30	72	81	125	122	133	116	83$	49	26	8	0	0	0	0	0	859.	24
18	0	0	0	0	0	0	4	26	54	83	97	134	126	103	121	96	69	36	11	0	0	0	0	0	960.	24
19	0	0	0	0	0	0	5	29	61	96	130	148	149	120	118	96	71	35	11	0	0	0	0	0	1070.	24
20	0	0	0	0	0	0	5	30	48	92	124	136	94	117	127	105	68	32	9	0	0	0	0	0	988.	24
21	0	0	0	0	0	0	3	19	49	80$	111	132	133	140	115	95	62	32	10	0	0	0	0	0	961.	24
22	0	0	0	0	0	0	5	27	48	71	121	123	138	90	28	26	34	22%	2	0	0	0	0	0	734.	24
23	0	0	0	0	0	0	1	5	20	46	81	119	113	9	101	108	39	43	10	0	0	0	0	0	696.	24
24	0	0	0	0	0	0	1	7	14	72	100	31	110	164	109	34	34	23	5	0	0	0	0	0	703.	24
25	0	0	0	0	0	0	2	14	37	60	77	81	103	100	44	68%	39	1	1	0	0	0	0	0	626.	24
26	0	0	0	0	0	0	2	20	35	42$	49	88	138	110	33	48#	6#	20	5	0	0	0	0	0	644.	$22
27	0	0	0	0	0	0	2	7#	9999#	9999#	82#	102	106	114	121	84	51	35	7	0	0	0	0	0	99999.	#20
28	0	0	0	0	0	0	4	30	39	94	124	152	159	142	82	77	47	5	2	0	0	0	0	0	957.	24
29	0	0	0	0	0	0	4	27	59	87	75	83	58	39	127	95	58	33	8	0	0	0	0	0	752.	24
30	0	0	0	0	0	0	3	29	56	88	99	134	116	92	71	75%	43	25%	8#	0#	0	0	0	0	842.	$22
31	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.	#10
AV	0	0	0	0	0	0$	5$	25$	52$	85$	107$	125$	126$	115$	106$	90$	57$	32$	10$	1$	0	0	0	0	936.$	
HR	31	31	31	31	31	30	28	27	27	28	28	29	28	28	28	27	27	29	28	29	31	31	31	31		898

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-40

ATLANTA (GA TECH) YEAR 1979 MONTH 8

AVAILABLE SUNSHINE %

DAY \ HOUR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	0	42	100	100	100	60	85	98	93	100	98	58	92	83	0	0	0	0	0	81.	24
2	0	0	0	0	0	0	18	25	45	77	92	98	98	100	93	90	100	100	65	0	0	0	0	0	73.	24
3	0	0	0	0	0	0	43	100	100	100	100	100	62	80	45	88	87	67	75	0	0	0	0	0	77.	24
4	0	0	0	0	0	0	58	100	100	100	100	97	93	80	90	90	93	93	42	0	0	0	0	0	83.	24
5	0	0	0	0	0	0	22	100	100	100	100	100	100	85	78	92	97	100	52	0	0	0	0	0	83.	24
6	0	0	0	0	0	0	0	78	100	100	97	98	97	97	90	100	100	100	48	0	0	0	0	0	81.	24
7	0	0	0	0	0	0	8	100	100	100	100	100	100	100	100	100	100	100	38	0	0	0	0	0	84.	24
8	0	0	0	0	0	0	0	60	100	100	100	95	53	7	42	90	100	73	0	0	0	0	0	0	81.	24
9	0	0	0	0	0	0	0	52	100	100	100	95	40	3	10	0	0	0	0	0	0	0	0	0	37.	24
10	0	0	0	0	0	0	0	60	100	95	92	87	83	57	97	15	0	0	0	0	0	0	0	0	52.	24
11	0	0	0	0	0	0	0	0	30	52	87	32	0	0	0	62	0	0	0	0	0	0	0	0	19.	24
12	0	0	0	0	0	0	0	0	0	8	33	67	75	87	83	100	85	83	87	0	0	0	0	0	53.	24
13	0	0	0	0	0	0	10	60	75	93	42	100	80	60	50	60	50	50	0	0	0	0	0	0	57.	24
14	0	0	0	0	0	0	0	80	100	70	100	80	90	90	100	80	60	7	1	0	0	0	0	0	7.	24
15	0	0	0	0	0	0	11	100	100	100	100	100	100	100	100	67	95	93	0	0	0	0	0	0	78.	24
16	0	0	0	0	0	0	0	0	32	38	5	2	0	29	96	100	96	30	0	0	0	0	0	0	32.	24
17	0	0	0	0	0	0	0	0	0	12	10	58	17	48	56	30	22	0	0	0	0	0	0	0	16.	24
18	0	0	0	0	0	0	0	0	30	48	45	70	52	32	80	82	100	62	0	0	0	0	0	0	45.	24
19	0	0	0	0	0	0	0	100	100	100	100	100	100	63	82	93	100	80	25	0	0	0	0	0	79.	24
20	0	0	0	0	0	0	0	97	55	100	100	87	22	63	98	100	100	17	0	0	0	0	0	0	64.	24
21	0	0	0	0	0	0	0	0	57	100	77	87	80	90	85	100	93	23	0	0	0	0	0	0	60.	24
22	0	0	0	0	0	0	0	47	10	2	80	40	75	38	0	0	0	17	0	0	0	0	0	0	24.	24
23	0	0	0	0	0	0	0	0	0	0	0	27	37	0	25	70	10	87	23	0	0	0	0	0	21.	24
24	0	0	0	0	0	0	0	0	0	12	30	0	33	95	48	0	0	0	5	0	0	0	0	0	17.	24
25	0	0	0	0	0	0	0	0	0	0	0	2	0	12	0	28	15	0	0	0	0	0	0	0	4.	24
26	0	0	0	0	0	0	0	0	0	0	0	0	42	29	0	0	0	0	0	0	0	0	0	0	6.	24
27	0	0	0	0	0	0	0	0	0	60	10	18	35	57	87	57	27	100	12	0	0	0	0	0	42.	24
28	0	0	0	0	0	0	0	40	13	72	75	100	93	85	3	22	23	0	0	0	0	0	0	0	41.	24
29	0	0	0	0	0	0	2	100	100	95	37	33	17	0	87	100	70	100	43	0	0	0	0	0	61.	24
30	0	0	0	0	0	0	9	100	72	100	100	100	75	55	33	70	0%	0%	0	0	0	0	0	0	53.	24
31	0	0	0	0	0	0	0	60	100	100	100	50	30	100	90	100	20	0	0	0	0	0	0	0	0.	24
AV	0	0	0	0	0	0	0	9	50	57	68	66	67	60	66	60	64	57	49	21	0	0	0	0	53.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
S - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

GT 3% ERROR IN MONTHLY AVG:
DAILY AVG = 48.

TABLE A-41

ATLANTA (GA TECH) YEAR 1979 MONTH 9

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.M	10
2	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	2418M	7	710	1660	158	0	0	0	0	0	99999.M	15
3	0	0	0	0	0	0	284	836	104	56	1349	1657	1746	782	3	4	3	3	3	0	0	0	0	0	6830.	24
4	0	0	0	0	0	0	2	159	1409	2038	1096	1031	108	287	4	7	4	4	8	0	0	0	0	0	6155.	24
5	0	0	0	0	0	0	2	984	2475	2842	2494	3168	3172	3135	2819	2568	1469	1489	383	0	0	0	0	0	26998.	24
6	0	0	0	0	0	0	155	919	1625	1950	1252	1825	1903	1791	1645	1104	860	475	98	0	0	0	0	0	15600.	24
7	0	0	0	0	0	0	33	412	1011	1396	1819	2159	2136	2083	1911	1905	1640	1103	279	0	0	0	0	0	17886.	24
8	0	0	0	0	0	0	53	469	930	1322	1403	1263	491	903	599	1174	1142	632	33	0	0	0	0	0	10413.	24
9	0	0	0	0	0	0	62	519	1162	1773	2073	2197	2208	2234	2199	1966	1536	814	130	0	0	0	0	0	18872.	24
10	0	0	0	0	0	0	829$	1657	2392	2836	2789	3125	3225	3183	3082	2806	2471	1904	618	0	0	0	0	0	30917.	24
11	0	0	0	0	0	0	260	1663	2508	2945	3209	3225	3171	3185	3019	2761	1996	975	109	0	0	0	0	0	29027.	24
12	0	0	0	0	0	0	7	468	481	625	1134	535	33	3	3	3	3	15	2	0	0	0	0	0	3314.	24
13	0	0	0	0	0	0	2	3	3	3	3	14	3	31	42	408	5	211	2	0	0	0	0	0	730.	24
14	0	0	0	0	0	0	457%	2204	2832	1290	16	6	39	745	251	221	928	1121	251	0	0	0	0	0	10362.	24
15	0	0	0	0	0	0	88	140	360	941	1160	2284	2127	1820	1207	1209	913	887	91	0	0	0	0	0	13027.	24
16	0	0	0	0	0	0	2	16	3	66	384	454	5	16	3	3	3	3	2	0	0	0	0	0	959.	24
17	0	0	0	0	0	0	1$	3	3	3	3	3	3	5	3	3	3	3	2	0	0	0	0	0	37.	24
18	0	0	0	0	0	0	2	3	3	3	3	3	3	3	3	3	3	3	2	0	0	0	0	0	36.	24
19	0	0	0	0	0	0	2	15	1085	1758	682	866	788	1774	1581	1117	520	124	2	0	0	0	0	0	10213.	24
20	0	0	0	0	0	0	2	14	3	10	43	3	3	3	3	3	3	3	2	0	0	0	0	0	91.	24
21	0	0	0	0	0	0	2	3	3	3	3	3	3	3	3	3	3	3	2	0	0	0	0	0	33.	24
22	0	0	0	0	0	0	2	103	5	208	6	3	3	9	3	3	3	21	4	0	0	0	0	0	371.	24
23	0	0	0	0	0	0	2	3	86	92	20	19	3	3	3	3	3	3	2	0	0	0	0	0	240.	24
24	0	0	0	0	0	0	1$	3	3	3	3	3	3	3	3	3	3	3	2	0	0	0	0	0	35.	24
25	0	0	0	0	0	0	2	3	3	3	3	3	3	3	12	30	3	3	2	0	0	0	0	0	70.	24
26	0	0	0	0	0	0	2	7	164	215	170	16	3	3	3	3	3	3	1	0	0	0	0	0	591.	24
27	0	0	0	0	0	0	1	3	3	3	3	3	3	3	3	3	3	3	1	0	0	0	0	0	32.	24
28	0	0	0	0	0	0	1	3	7	6M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	8999M	9999M	0	0	0	0	0	99999.M	14
29	0	0	0	0	0	0	85	269	736	3	25	733	454	5	569	275	3	3	1	0	0	0	0	0	3160.	24
30	0	0	0	0	0	0	1	15	1119	1732	1632	814	1117	1750	1430	1065	2042	707	91	0	0	0	0	0	13515.	24
AV	0	0	0	0	0	0	84$	389$	733$	893$	840$	941$	843$	873$	756$	666$	581$	435$	81$	0$	0	0	0	0	8114.$	
HR	30	30	30	30	30	30	28	28	28	27	27	27	27	27	27	28	28	28	28	29	30	30	30	30		687

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-42

ATLANTA (GA TECH) YEAR 1979 MONTH 9

DIRECT (RG830) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	99999.#	10
2	0	0	0	0	0	0	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	1497#	9	503	1246	139	1	0	0	0	0	99999.#	15
3	0	0	0	0	0	0	243	627	67	35	836	1017	1074	487	6	10	12	7	7	0	0	0	0	0	4428.	24
4	0	0	0	0	0	0	5	112	912	1277	677	635	70	174	7	10	7	9	11	0	0	0	0	0	3904.	24
5	0	0	0	0	0	0	5	713	1623	1789	1544	1936	1937	1941	1778	1654	1041	1144	352	0	0	0	0	0	17459.	24
6	0	0	0	0	0	0	182	800	1248	1427	899	1276	1400	1326	1239	901	760%	465	107	0	0	0	0	0	12009.	24
7	0	0	0	0	0	0	35	398	895%	1148	1402	1598	1582	1511	1433	1466	1322	975	271	0	0	0	0	0	14035.	24
8	0	0	0	0	0	0	53	441	817%	1084	1137	1022%	404	740	493	977%	986%	597	42	0	0	0	0	0	8795.	24
9	0	0	0	0	0	0	68	482	953	1332	1494	1557	1563	1580	1569	1449	1210	728	137	0	0	0	0	0	14123.	24
10	0	0	0	0	0	0	682$	1364	1769	1972	1895	2089	2130	2109	2065	1947	1792	1505	534	0	0	0	0	0	21852.	24
11	0	0	0	0	0	0	274	1335	1776	1985	2105	2102	2071	2075	1996	1869	1428	795	105	0	0	0	0	0	19916.	24
12	0	0	0	0	0	0	10	389	349	413	735	341	23	7	6	6	6	15	5	0	0	0	0	0	2305.	24
13	0	0	0	0	0	0	4	6	6	6	8	10	6	21	27	259	7	153	4	0	0	0	0	0	513.	24
14	0	0	0	0	0	0	415%	1557	1848	825	13	7	26	495	173	162	729	955	244	0	0	0	0	0	7451.	24
15	0	0	0	0	0	0	94	127	242	823	771	1529	1428	1090	826	845	713	772	96	0	0	0	0	0	9155.	24
16	0	0	0	0	0	0	5	22	6	54	282	320	6	13	6	5	6	6	4	0	0	0	0	0	733.	24
17	0	0	0	0	0	0	3$	6	6	6	6	6	6	6	6	6	6	5	4	0	0	0	0	0	69.	24
18	0	0	0	0	0	0	4	6	6	6	6	6	6	6	5	6	5	6	4	0	0	0	0	0	68.	24
19	0	0	0	0	0	0	3	14	722	1157	384	607	500	1130	1050	773	391	103	4	0	0	0	0	0	6838.	24
20	0	0	0	0	0	0	3	13	5	10	30	5	5	5	5	5	5	5	4	0	0	0	0.	0	103.	24
21	0	0	0	0	0	0	3	5	5	5	5	5	5	5	5	5	5	5	3	0	0	0	0	0	65.	24
22	0	0	0	0	0	0	3	81	7	130	6	5	5	9	6	5	5	22	7	0	0	0	0	0	292.	24
23	0	0	0	0	0	0	3	5	61	61	14	15	5	5	5	5	5	5	3	0	0	0	0	0	194.	24
24	0	0	0	0	0	0	3$	5	5	5	5	5	5	5	5	5	5	5	3	0	0	0	0	0	65.	24
25	0	0	0	0	0	0	3	5	5	5	5	5	5	5	11	25	5	5	3	0	0	0	0	0	90.	24
26	0	0	0	0	0	0	3	8	112	148	131	16	5	5	5	5	5	5	3	0	0	0	0	0	452.	24
27	0	0	0	0	0	0	3	5	5	5	5	5	5	5	5	5	5	5	3	0	0	0	0	0	63.	24
28	0	0	0	0	0	0	3	5	8	7#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	0	99999.#	14
29	0	0	0	0	0	0	23	153	425	5	18	465	298	7	419	209	7	5	2	0	0	0	0	0	2036.	24
30	0	0	0	0	0	0	3	18	864	1226	1127	557	759	1197	974	745	1481	609	42	0	0	0	0	0	9598.	24
AV	0	0	0	0	0	0	78$	311$	527$	620$	578$	635$	568$	591$	523$	477$	445$	383$	77$	0$	0	0	0	0	5787.$	
HR	30	30	30	30	30	30	28	28	28	27	27	27	27	27	27	28	28	28	28	29	30	30	30	30		687

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-43

ATLANTA (GA TECH) YEAR 1979 MONTH 9

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	0	99999.M	10
2	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	2840M	568	901	754	68	0	0	0	0	0	99999.M	15
3	0	0	0	0	0	0	82	480	794	1089	2210	2562	2703	1771	874	537	349	135	15	0	0	0	0	0	13601.	24
4	0	0	0	0	0	0	6	258	1230	1897	1809	2107	1368	1800	907	955	306	454	113	0	0	0	0	0	13209.	24
5	0	0	0	0	0	0	10	481	1457	2049	2408	3009	3141	3098	2663	2237	1363	693	95	0	0	0	0	0	22708.	24
6	0	0	0	0	0	0	57	514	1231	1875	1923	2604	3009	2774	2541	1907	1186	536	75	0	0	0	0	0	20231.	24
7	0	0	0	0	0	0	39	458	1145	1821	2464	2935	3041	2934	2506	2048	1376	656	94	0	0	0	0	0	21517.	24
8	0	0	0	0	0	0	38	450	1109	1821	2379	2670	2120	2469	1796	1810	1268	539	88	0	0	0	0	0	18537.	24
9	0	0	0	0	0	0	46	483	1204	1952	2547	2935	3071	2970	2628	2068	1353	593	77	0	0	0	0	0	21925.	24
10	0	0	0	0	0	0	306$	612	1382	2116	2622	3093	3248	3128	2765	2176	1472	691	93	0	0	0	0	0	23706.	24
11	0	0	0	0	0	0	56	604	1398	2128	2744	3099	3202	3114	2741	2191	1374	559%	67	0	0	0	0	0	23276.	24
12	0	0	0	0	0	0	19	401	1029	1480	2134	1888	804	766	440	350	445	314	22%	0	0	0	0	0	10094.	24
13	0	0	0	0	0	0	2	40	181	413	668	894	574	918	1161	977	318	488	39	0	0	0	0	0	6653.	24
14	0	0	0	0	0	0	56	603	1382	1480	1011	970	1503	2294	1401	1280	1108	535	64	0	0	0	0	0	13686.	24
15	0	0	0	0	0	0	40	291	1032	1537	2005	2839	2947	2466	1756	1516	883	498	39	0	0	0	0	0	17670.	24
16	0	0	0	0	0	0	8%	215	269	1074	1944	2185	1209	1172	581	362	135	50	4%	0	0	0	0	0	9210.	24
17	0	0	0	0	0	0	25$	51	250	355	808	644	800	1140	858	335	299	199	8%	0	0	0	0	0	5772.	24
18	0	0	0	0	0	0	2	18	64	154	342	370	594	704	586	384	217	51	2	0	0	0	0	0	3488.	24
19	0	0	0	0	0	0	14%	314	1149	1901	1787	2401	2211	2656	2271	1516	665	326	25	0	0	0	0	0	17436.	24
20	0	0	0	0	0	0	26	313	498	734	1111	690	645	741	365	302	129	45	2	0	0	0	0	0	5603.	24
21	0	0	0	0	0	0	2	13	77	320	393	208	350	506	524	424	280	23	34	0	0	0	0	0	3156.	24
22	0	0	0	0	0	0	8	346	474	999	1067	792	441	566	517	549	451	267	27	0	0	0	0	0	6503.	24
23	0	0	0	0	0	0	9	209	776	1184	1293	1236	813	536	540	208	56	20	2	0	0	0	0	0	6883.	24
24	0	0	0	0	0	0	14$	29	153	369	417	379	360	368	402	377	367	57	5	0	0	0	0	0	3316.	24
25	0	0	0	0	0	0	2	96	345	534	831	959	913	937	1009	852	503	156	3	0	0	0	0	0	7139.	24
26	0	0	0	0	0	0	2	230	871	1127	1431	1348	992	431	361	307	203	48	2	0	0	0	0	0	7354.	24
27	0	0	0	0	0	0	2	7	82	146	315	296	226	247	201	124	79	19	2	0	0	0	0	0	1745.	24
28	0	0	0	0	0	0	10%	147	456	421M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	0	99999.M	14
29	0	0	0	0	0	0	19	217	846	767	1251	2327	1593	918	1488	953	468	165	2	0	0	0	0	0	11012.	24
30	0	0	0	0	0	0	8	263	1109	1645	2222	1745	1999	2331	1704	1078	1216	332	27	0	0	0	0	0	15698.	24
AV	0	0	0	0	0	0	32$	292$	765$	1221$	1561$	1748$	1626$	1621$	1318$	1013$	678$	329$	38$	0$	0	0	0	0	12262.$	
HR	30	30	30	30	30	30	28	28	28	27	27	27	27	27	27	28	28	28	28	29	30	30	30	30		687

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-44

ATLANTA (GA TECH) YEAR 1979 MONTH 9

GLOBAL (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	9999W	9999W	9999W	9999W	9999W	9999W	9999W	9999W	9999W	9999W	9999W	9999W	9999W	9999W	0	0	0	0	99999.W	10
2	0	0	0	0	0	0	9999W	9999W	9999W	9999W	9999W	9999W	9999W	9999W	1601W	267	503	437	32	0	0	0	0	0	99999.W	15
3	0	0	0	0	0	0	46	268	453	605	1256	1448	1542	971	439X	249X	165	54	7	0	0	0	0	0	7502.	24
4	0	0	0	0	0	0	4	135	707	1081	1012	1178	744	981	479	514	161	250	66	0	0	0	0	0	7311.	24
5	0	0	0	0	0	0	3	281	853	1184	1384	1734X	1785X	1759X	1508	1275	786	401	51	0	0	0	0	0	13005.	24
6	0	0	0	0	0	0	36	319	746	1130	1129	1524	1783	1628	1490	1135	705	316	39	0	0	0	0	0	11979.	24
7	0	0	0	0	0	0	27	290	722	1121	1497	1764	1816	1739	1491	1228	834	401	53	0	0	0	0	0	12983.	24
8	0	0	0	0	0	0	28	290	701	1118	1441	1601	1254	1489	1038X	1080	769	321	32	0	0	0	0	0	11162.	24
9	0	0	0	0	0	0	37	312	747	1179	1524	1743	1817	1753	1559	1233	818	360	44	0	0	0	0	0	13125.	24
10	0	0	0	0	0	0	202S	403	860	1289	1573	1848	1936	1861	1649	1312	895	431	57	0	0	0	0	0	14315.	24
11	0	0	0	0	0	0	43	392	860	1287	1840	1843	1902	1837	1620	1289	812	328	41	0	0	0	0	0	13895.	24
12	0	0	0	0	0	0	18	245	610	849	1229	1068	430	408	224	178	240	173	12	0	0	0	0	0	5683.	24
13	0	0	0	0	0	0	3	10	63	195	326X	440X	269	468X	605X	502X	138	257	15	0	0	0	0	0	3291.	24
14	0	0	0	0	0	0	30	357	813	855	567	537	847	1316	797	736	845	309	33	0	0	0	0	0	7842.	24
15	0	0	0	0	0	0	21	163	614	897	1149	1635	1700	1444X	1007X	885	510	295	15	0	0	0	0	0	10336.	24
16	0	0	0	0	0	0	6	130	149	616	1118	1249	865	631	302	185	62	16	3	0	0	0	0	0	5132.	24
17	0	0	0	0	0	0	15S	31	129	172	407X	318	394X	594X	437X	156	145	94	4	0	0	0	0	0	2896.	24
18	0	0	0	0	0	0	3	6	28	48	155	181	309	377	312	183	102	17	3	0	0	0	0	0	1720.	24
19	0	0	0	0	0	0	6	174	875	1128	1048	1411	1283	1580	1334	879	485	172	9	0	0	0	0	0	10162.	24
20	0	0	0	0	0	0	15	178	272	401	618	357	332	381	173	143	55	16	3	0	0	0	0	0	2943.	24
21	0	0	0	0	0	0	3	4	18	141	171	72	144	221X	230X	181	121	8	15	0	0	0	0	0	1330.	24
22	0	0	0	0	0	0	4	202	259	561	588	432	228	305	278	303	250	143	13	0	0	0	0	0	3585.	24
23	0	0	0	0	0	0	6	120	457	685	733	885	433	279	284	100	22	5	2	0	0	0	0	0	3812.	24
24	0	0	0	0	0	0	8S	16	78	195	216	192	190	185	206	197	198	25	3	0	0	0	0	0	1707.	24
25	0	0	0	0	0	0	2	53	187	284	443	511	483	500	549	467	267	78	2	0	0	0	0	0	3826.	24
26	0	0	0	0	0	0	2	126	496	632	795	720	518X	207	169	144	88	19	2	0	0	0	0	0	3914.	24
27	0	0	0	0	0	0	2	4	20	47	115X	119	89	98	79	39	21	6	2	0	0	0	0	0	641.	24
28	0	0	0	0	0	0	4	71	240	213W	9999W	9999W	9999W	9999W	9999W	9999W	9999W	9999W	9999W	0	0	0	0	0	99999.W	14
29	0	0	0	0	0	0	8	84	474	429	713	1363	906	504	866	531	248	80	2	0	0	0	0	0	6209.	24
30	0	0	0	0	0	0	4	172	664	972	1311	1008	1145X	1352X	986X	597X	740	196	19	0	0	0	0	0	9187.	24
AV	0	0	0	0	0	0	21S	173S	460S	707S	895S	999S	924S	920S	745S	571S	385S	186S	21S	0S	0	0	0	0	7007.S	
HR	30	30	30	30	30	30	28	28	28	27	27	27	27	27	27	28	28	28	28	29	30	30	30	30		687

FLAGS:
X - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
W - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
S - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-45

ATLANTA (GA TECH) YEAR 1979 MONTH 9

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	8	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.M	10
2	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	991M	820	616	276	68	0	0	0	0	0	99999.M	15
3	0	0	0	0	0	0	61	317	764	1076	1167	1162	1185	1134	924%	581	380	163	26	0	0	0	0	0	8940.	24
4	0	0	0	0	0	0	20	231	591	640	1004	1237	1294	1572	939	976	342	485	149	0	0	0	0	0	9481.	24
5	0	0	0	0	0	0	28	236	357	314	552	366	356	413	473	575	679	298	88	0	0	0	0	0	4733.	24
6	0	0	0	0	0	0	57	307	530	708	1034	1125	1416	1346	1315	1246	813	444	97	0	0	0	0	0	10439.	24
7	0	0	0	0	0	0	47	378	724	997	1127	1148	1200	1185	1066	854	629	380	89	0	0	0	0	0	9825.	24
8	0	0	0	0	0	0	44	356	728	1043	1365	1656	1740	1745	1390	1115	774	400	93	0	0	0	0	0	12448.	24
9	0	0	0	0	0	0	51	374	705	886	1018	1122	1179	1112	979	851	670	406	89	0	0	0	0	0	9441.	24
10	0	0	0	0	0	0	112$	223	341	402	555	500	473	468	447	437	349	215	54	0	0	0	0	0	4576.	24
11	0	0	0	0	0	0	36	208	300	353	376	441	492	472	489	491	482	355%	75	0	0	0	0	0	4571.	24
12	0	0	0	0	0	0	29	307	822	1099	1298	1456	806	795	471	377	466	334	39	0	0	0	0	0	8298.	24
13	0	0	0	0	0	0	8	68	191	438	686	895	594	913	1147	760	344	462	59	0	0	0	0	0	6563.	24
14	0	0	0	0	0	0	22	109	176	761	1013	982	1478	1673	1227	1160	706	291	54	0	0	0	0	0	9652.	24
15	0	0	0	0	0	0	33	270	865	964	1143	972	1154	1186	910	816	536	303	49	0	0	0	0	0	9200.	24
16	0	0	0	0	0	0	14	227	285	1046	1664	1828	1231	1186	611	392	161	73	11	0	0	0	0	0	8728.	24
17	0	0	0	0	0	0	38$	76	272	374	818	660	808	1144	869	350	317	215	11	0	0	0	0	0	5952.	24
18	0	0	0	0	0	0	3	35	100	169	355	387	807	715	602	382	235	68	6	0	0	0	0	0	3666.	24
19	0	0	0	0	0	0	19	323	713M	998M	1362	1608	1528	1222	1143	889	673	315	39	0	0	0	0	0	10850.$	22
20	0	0	0	0	0	0	33	323	512	743	1091	714	669	764	392	325	154	68	5	0	0	0	0	0	5794.	24
21	0	0	0	0	0	0	3	36	108	350	421	242	381	534	552	455	312	44	54	0	0	0	0	0	3493.	24
22	0	0	0	0	0	0	18	351	495	895	1080	810	460	576	531	565	470	281	35	0	0	0	0	0	6587.	24
23	0	0	0	0	0	0	13	219	739	1132	1283	1233	832	559	562	233	81	44	4	0	0	0	0	0	6932.	24
24	0	0	0	0	0	0	20$	39	168	380	429	392	393	381	416	392	383	76	11	0	0	0	0	0	3481.	24
25	0	0	0	0	0	0	5	111	358	548	841	970	928	953	1014	846	526	183	9	0	0	0	0	0	7290.	24
26	0	0	0	0	0	0	6	244	840	1035	1277	1385	1015	462	390	334	232	69	3	0	0	0	0	0	7240.	24
27	0	0	0	0	0	0	3	18	99	162	332	310	243	261	222	146	99	32	2	0	0	0	0	0	1929.	24
28	0	0	0	0	0	0	18	175	485	450M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	0	99999.M	14
29	0	0	0	0	0	0	21	179%	486$	793	1249	1764	1251	952	1123	814	503	202	14	0	0	0	0	0	9351.	24
30	0	0	0	0	0	0	15	297	708%	710	1124	1144	1138	1023	790	560	492	238	34	0	0	0	0	0	8273.	24
AV	0	0	0	0	0	0	28$	216$	472$	693$	950$	980$	920$	917$	778$	627$	444$	240$	45$	0$	0	0	0	0	7309.$	
HR	30	30	30	30	30	30	28	28	27	28	27	27	27	27	27	28	28	28	28	29	30	30	30	30		685

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-46

ATLANTA (GA TECH) YEAR 1979 MONTH 9

LAT. TILTED KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.M	10
2	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	2959M	552	901	734	76	0	0	0	0	0	99999.M	15
3	0	0	0	0	0	0	70	441	738	1018	2352	2741	2826	1821	762	514	389	158	26	0	0	0	0	0	13856.	24
4	0	0	0	0	0	0	17	268	1256	2023	1895	2248	1314	1761	827	880	279	432	123	0	0	0	0	0	13322.	24
5	0	0	0	0	0	0	24	472	1521	2200	2621	3352	3485	3420	2928	2397	1373	695	105	0	0	0	0	0	24595.	24
6	0	0	0	0	0	0	59	504	1285	2034	2065	2850	3267	3059	2788	1944	1203	526	86	0	0	0	0	0	21671.	24
7	0	0	0	0	0	0	44	444	1161	1935	2711	3268	3392	3253	2772	2237	1452	660	100	0	0	0	0	0	23430.	24
8	0	0	0	0	0	0	44	438	1131	1942	2803	2941	2224	2618	1917	1950	1335	550	77	0	0	0	0	0	19769.	24
9	0	0	0	0	0	0	51	472	1247	2122	2835	3301	3459	3342	2947	2278	1450	607	86	0	0	0	0	0	24198.	24
10	0	0	0	0	0	0	305$	610	1471	2340	2940	3500	3687	3550	3124	2428	1601	728	99	0	0	0	0	0	26383.	24
11	0	0	0	0	0	0	56	607	1506	2372	3098	3526	3656	3553	3123	2456	1516	581	72	0	0	0	0	0	26123.	24
12	0	0	0	0	0	0	27	394	1055	1563	2278	1933	757	685	400	319	403	296	29	0	0	0	0	0	10138.	24
13	0	0	0	0	0	0	5	51	180	360	583	783	504	830	1073	979	312	477	46	0	0	0	0	0	6165.	24
14	0	0	0	0	0	0	53	636	1524	1557	918	873	1474	2430	1410	1231	1172	570	72	0	0	0	0	0	13919.	24
15	0	0	0	0	0	0	43	278	1048	1709	2233	3237	3297	2784	1974	1669	951	533	49	0	0	0	0	0	19807.	24
16	0	0	0	0	0	0	12	192	247	1013	1974	2285	1096	1045	474	348	131	59	9	0	0	0	0	0	8885.	24
17	0	0	0	0	0	0	32$	65	218	324	719	587	702	981	718	291	271	194	12	0	0	0	0	0	5115.	24
18	0	0	0	0	0	0	3	33	92	148	314	333	523	622	516	327	202	58	5	0	0	0	0	0	3175.	24
19	0	0	0	0	0	0	18	292	1271	2205	1897	2582	2354	2974	2499	1716	925	331	30	0	0	0	0	0	19093.	24
20	0	0	0	0	0	0	26	300	452	666	1044	611	578	652	332	285	129	58	4	0	0	0	0	0	5139.	24
21	0	0	0	0	0	0	2	29	92	297	355	200	321	448	484	390	279	38	41	0	0	0	0	0	2978.	24
22	0	0	0	0	0	0	16	347	439	980	1008	693	406	547	471	488	407	260	34	0	0	0	0	0	6095.	24
23	0	0	0	0	0	0	15	203	756	1186	1227	1138	737	493	498	207	70	39	4	0	0	0	0	0	6572.	24
24	0	0	0	0	0	0	22$	43	153	331	376	344	343	339	366	341	335	70	13	0	0	0	0	0	3078.	24
25	0	0	0	0	0	0	7	105	321	466	737	850	812	829	931	823	480	158	8	0	0	0	0	0	6546.	24
26	0	0	0	0	0	0	6	234	881	1191	1496	1255	903	391	324	273	192	58	3	0	0	0	0	0	7206.	24
27	0	0	0	0	0	0	2	19	92	145	290	265	213	228	193	127	86	30	2	0	0	0	0	0	1693.	24
28	0	0	0	0	0	0	15	152	420	383M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	0	99999.M	14
29	0	0	0	0	0	0	33	253	920	703	1196	2576	1711	892	1619	1018	437	166	7	0	0	0	0	0	11534.	24
30	0	0	0	0	0	0	16	260	1225	2007	2582	1965	2296	2706	2185%	1344%	1536	425	39	0	0	0	0	0	18605.	24
AV	0	0	0	0	0	0	37$	292$	810$	1291$	1643$	1861$	1716$	1713$	1395$	1065$	708$	339$	45$	0$	0	0	0	0	12913.$	
HR	30	30	30	30	30	30	28	28	28	27	27	27	27	27	27	28	28	28	28	29	30	30	30	30		687

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-47

ATLANTA (GA TECH) YEAR 1979 MONTH 9

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	99999.M	10
2	0	0	0	0	0	0	9999M	9999M	9999M	8999M	9999M	9999M	9999M	9999M	133M	48	47	33	6	0	0	0	0	0	99999.M	15
3	0	0	0	0	0	0	3	25	44	84	120	139	138	101	61	39	24	9	1	0	0	0	0	0	769.	24
4	0	0	0	0	0	0	2	16	62	99	102	120	84	106	57	56	19	25	5	0	0	0	0	0	754.	24
5	0	0	0	0	0	0	3	26	67	103	126	158	164	156	132	104	60	31	5	0	0	0	0	0	1135.	24
6	0	0	0	0	0	0	3	24	57	86	96	129	139	133	117	84	54	25	4	0	0	0	0	0	950.	24
7	0	0	0	0	0	0	2	21	52	85	116	139	144	140	117	92	59	28	5	0	0	0	0	0	998.	24
8	0	0	0	0	0	0	2	21	51	84	111	125	104	116	92	64	56	25	4	0	0	0	0	0	876.	24
9	0	0	0	0	0	0	2	22	56	94	126	146	152	145	125	96	61	27	4	0	0	0	0	0	1056.	24
10	0	0	0	0	0	0	13$	26	62	101	131	155	163	154	132	99	63	29	4	0	0	0	0	0	1130.	24
11	0	0	0	0	0	0	2	25	62	101	135	154	158	151	130	99	61	27	3	0	0	0	0	0	1108.	24
12	0	0	0	0	0	0	1	21	52	81	113	106	53	50	31	25	27	18	2	0	0	0	0	0	580.	24
13	0	0	0	0	0	0	0	2	11	29	47	61	41	59	72	59	23	24	3	0	0	0	0	0	431.	24
14	0	0	0	0	0	0	2	26	64	77	59	58	87	126	78	68	53	26	3	0	0	0	0	0	729.	24
15	0	0	0	0	0	0	2	17	54	82	111	148	151	129	98	78	47	23	3	0	0	0	0	0	943.	24
16	0	0	0	0	0	0	0	11	17	60	105	119	73	75	39	26	10	3	0	0	0	0	0	0	538.	24
17	0	0	0	0	0	0	2$	3	17	26	56	47	58	77	59	24	20	12	1	0	0	0	0	0	403.	24
18	0	0	0	0	0	0	0	1	6	13	25	27	42	46	38	22	13	4	0	0	0	0	0	0	238.	24
19	0	0	0	0	0	0	1	15	55	95	97	125	118	133	110	76	47	18	1	0	0	0	0	0	891.	24
20	0	0	0	0	0	0	1	15	30	45	65	46	43	49	26	21	9	3	0	0	0	0	0	0	353.	24
21	0	0	0	0	0	0	0	1	6	24	30	18	28	37	36	30	19	1	0	0	0	0	0	0	233.	24
22	0	0	0	0	0	0	0	15	28	60	67	52	31	36	33	34	27	16	1	0	0	0	0	0	400.	24
23	0	0	0	0	0	0	0	11	42	69	77	77	54	37	36	14	4	1	0	0	0	0	0	0	423.	24
24	0	0	0	0	0	0	1$	2	10	25	29	26	27	26	27	25	22	3	0	0	0	0	0	0	224.	24
25	0	0	0	0	0	0	0	5	21	36	55	63	61	61	63	52	32	8	0	0	0	0	0	0	458.	24
26	0	0	0	0	0	0	0	13	46	65	87	87	66	31	27	21	14	3	0	0	0	0	0	0	461.	24
27	0	0	0	0	0	0	0	1	5	11	24	22	18	19	16	9	5	1	0	0	0	0	0	0	131.	24
28	0	0	0	0	0	0	0	6	25	26M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	0	99999.M	14
29	0	0	0	0	0	0	1	16	47	45	72	123	91	58	74	52	26	8	0	0	0	0	0	0	612.	24
30	0	0	0	0	0	0	1	12	51	83	107	97	108	115	87	80%	48	12	0	0	0	0	0	0	779.	24
AV	0	0	0	0	0	0	2$	14$	39$	64$	85$	95$	89$	88$	71$	53$	34$	16$	2$	0$	0	0	0	0	652.$	
HR	30	30	30	30	30	30	28	28	28	27	27	27	27	27	27	28	28	28	28	29	30	30	30	30		687

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
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OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-48

ATLANTA (GA TECH) YEAR 1979 MONTH 9

AVAILABLE SUNSHINE %

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	0	0	0	0	0	20	0	50	70	100	100	80	30	0	0	0	0	0	0	0.	24
2	0	0	0	0	0	0	0	0	0	0	30	100	90	100	80	0	37	92	12	0	0	0	0	0	32.	24
3	0	0	0	0	0	0	23	55	7	0	55	75	87	37	0	0	0	0	0	0	0	0	0	0	25.	24
4	0	0	0	0	0	0	0	5	93	87	50	52	0	12	0	0	0	0	0	0	0	0	0	0	24.	24
5	0	0	0	0	0	0	0	64	100	100	100	100	100	100	100	100	100	97	18	0	0	0	0	0	81.	24
6	0	0	0	0	0	0	0	77	100	100	69	84	98	98	100	91	72	7	0	0	0	0	0	0	69.	24
7	0	0	0	0	0	0	0	3	100	100	100	100	100	98	100	100	100	100	6	0	0	0	0	0	80.	24
8	0	0	0	0	0	0	0	2	100	100	100	95	40	72	47	90	100	47	0	0	0	0	0	0	63.	24
9	0	0	0	0	0	0	0	15	100	100	100	100	100	100	100	100	100	73	0	0	0	0	0	0	79.	24
10	0	0	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	93.	24
11	0	0	0	0	0	0	0	100	100	100	100	100	100	100	100	100	88	69	0	0	0	0	0	0	84.	24
12	0	0	0	0	0	0	0	36	25	100	100	33	2	0	0	0	0	0	0	0	0	0	0	0	21.	24
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	21	0	10	0	0	0	0	0	0	3.	24
14	0	0	0	0	0	0	0	100	100	50	0	0	2	35	18	18	85	91	0	0	0	0	0	0	37.	24
15	0	0	0	0	0	0	38	5	14	52	52	97	87	72	53	52	66	75	38$	0	0	0	0	0	54.	24
16	0	0	0	0	0	0	0	0	0	3	28	31	0	0	0	0	0	0	0	0	0	0	0	0	5.	24
17	0	0	0	0	0	0	0$	0	0	0	0	0	0	0	0	0	0	0	0$	0	0	0	0	0	0.	24
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
19	0	0	0	0	0	0	0	0	59	98	27	56	70	66	60	73	43	2	0	0	0	0	0	0	48.	24
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
22	0	0	0	0	0	0	0	5	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.	24
23	0	0	0	0	0	0	0	0	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.	24
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
26	0	0	0	0	0	0	0	0	7	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2.	24
27	0	0	0	0	0	0	0$	0	0	0	0	0	0	0	0	0	0	0	0$	0	0	0	0	0	0.	24
28	0	0	0	0	0	0	0	0	0	0	10	30	70	30	80	10	10	0	0	0	0	0	0	0	0.	24
29	0	0	0	0	0	0	0	17	37	0	0	49	30	0	45	0	0	0	0	0	0	0	0	0	14.	24
30	0	0	0	0	0	0	0	0	86	98	74	45	52	71	62	53	100	50	0	0	0	0	0	0	57.	24
AV	0	0	0	0	0	0	0	2	21	40	43	37	41	34	35	33	31	34	29	2	0	0	0	0	29.	
HR	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		720

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-49

ATLANTA (GA TECH) YEAR 1979 MONTH 10

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	390$	781	1494	1797#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	0	99999.#	14
2	0	0	0	0	0	0	3#	426#	1410#	369	59#	9999#	9999#	9999#	9999#	1#	2456	1917	151%	0	0	0	0	0	99999.#	15
3	0	0	0	0	0	0	79	1595	2471	2897	3152	3252	3300	3260	3208	3021	2820	1631	87	0	0	0	0	0	30572.	24
4	0	0	0	0	0	0	1	3#	3#	33	41	3#	3#	3#	3	3#	3#	4	12	0	0	0	0	0	99999.#	17
5	0	0	0	0	0	0	98%	1993	2785	3175	3281	2846	2492	3425	3355	3146	2820	1852	109	0	0	0	0	0	31376.	24
6	0	0	0	0	0	0	102%	704	904	2722	3228	3300	3281	3113	700	4	320	242	1	0	0	0	0	0	18619.	24
7	0	0	0	0	0	0	56	1863	2861	3270	3446	3508	3496	3455	3338	3129	2712	1653	62	0	0	0	0	0	32850.	24
8	0	0	0	0	0	0	19	1579	2484	1271	2201$	3130	3243#	3215#	3069	2882	2410	1316	28	0	0	0	0	0	26408.	$22
9	0	0	0	0	0	0	10	1529	1781	1958	2092	1783	1655	1495	2012	1741	1556	376	1	0	0	0	0	0	17988.	24
10	0	0	0	0	0	0	1	3	51	1136	2143	3219	3613	3555	3402	3190	2087	1415	1	0	0	0	0	0	23814.	24
11	0	0	0	0	0	0	1	556	1888	779	3080	3336	3373	3309	2910	2854	2446	1343	12	0	0	0	0	0	25889.	24
12	0	0	0	0	0	0	18	1556	2539	2907	3101	3197	3189	3146	3023	2729	2190	1060	4	0	0	0	0	0	28660.	24
13	0	0	0	0	0	0	4	449	1999	2404	2858	2539	2748	1440	1080	1230	1996	1512	19	0	0	0	0	0	20278.	24
14	0	0	0	0	0	0	44	2165	3043	3377	3554	3631	3636	3599	3471	3230	2775	1596	16	0	0	0	0	0	34139.	24
15	0	0	0	0	0	0	37	1947	2850	3204	3376	3429	3377$	3326	2995	2478	1305	814	0	0	0	0	0	0	29138.	24
16	0	0	0	0	0	0	34	642	1570	1620	1253	2137	762	1154	1584	1240	1702	522	0	0	0	0	0	0	14220.	24
17	0	0	0	0	0	0	1	775	1960	2436	2652	2455	2494	2016	1454	1961	231	330	0	0	0	0	0	0	18764.	24
18	0	0	0	0	0	0	2	909	1931	2297	2467	1607	1072	654	2150	566	1461	622	0	0	0	0	0	0	15738.	24
19	0	0	0	0	0	0	1	3	3	3	3	335	2034	1227	1615	2110	1827	574	0	0	0	0	0	0	9734.	24
20	0	0	0	0	0	0	1	3	3	3	13	403	202	71	866	457	779	888	0	0	0	0	0	0	3286.	24
21	0	0	0	0	0	0	1	3	98	198	544	350	1349	2549	1912	2395	1560	637	0	0	0	0	0	0	11597.	24
22	0	0	0	0	0	0	1	3	3	10	677$	1344	1993	1895	1478	467	775	32	0	0	0	0	0	0	8676.	24
23	0	0	0	0	0	0	1	3	3	3	2095	3546	3624	3635	3503	3230	2737	1339	0	0	0	0	0	0	23718.	24
24	0	0	0	0	0	0	47	1700	2775	3264	3452	3498	3526	3451	3336	3076	2580	1171	0	0	0	0	0	0	31876.	24
25	0	0	0	0	0	0	35	1603	2717	3129	3338	3452	3466	3453	3314	3067	2518	1051	0	0	0	0	0	0	31142.	24
26	0	0	0	0	0	0	23	1608	2674	3113	3330	3461	3468#	3376#	3132#	2880%	2448	991	0	0	0	0	0	0	99999.#	21
27	0	0	0	0	0	0	6	1491	2623	3079	3309	3383	3276%	3293	3223	2945	2330	829	0	0	0	0	0	0	29786.	24
28	0	0	0	0	0	0	0	1164	2469	2930	3151	3240	3279	3236	3056	2789	2192	721	0	0	0	0	0	0	28229.	24
29	0	0	0	0	0	0	0	38	4#	3#	3#	3	3	3	3	3	139	29	0	0	0	0	0	0	99999.#	21
30	0	0	0	0	0	0	0	3	3	3	2	3	3	3	3	4	5	3	0	0	0	0	0	0	33.	24
31	0	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3	3	2	0	0	0	0	0	0	31.	24
AV	0	0	0	0	0	0	34$	920$	1842$	1779$	2209$	2371$	2356$	2299$	2138$	2030$	1758$	876$	178	0	0	0	0	0	20426.$	
HR	31	31	31	31	31	31	30	29	28	29	28	28	28	28	28	28	29	30	30	31	31	31	31	31		710

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-50

ATLANTA (GA TECH) YEAR 1979 MONTH 10

DIRECT (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	361$	721	1238	1421#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	0	99999.#	14
2	0	0	0	0	0	0	23#	419#	1091#	301	70#	9999#	9999#	9999#	9999#	1#	2051#	1496	32%	0	0	0	0	0	99999.#	14
3	0	0	0	0	0	0	135	1329	1816	2130	2147	2174	2198	2180	2138	2040	1862	1310	3	0	0	0	0	0	21463.	24
4	0	0	0	0	0	0	11	5#	5#	25	31	5#	5#	5#	5	5#	5#	6	2	0	0	0	0	0	99999.#	17
5	0	0	0	0	0	0	202	1571	1953	2124	2151	1855	1630	2242	2211	2108	1974	1466	6%	0	0	0	0	0	21492.	24
6	0	0	0	0	0	0	241	571	610	1806	2106	2136	2116	2017	458	6	245	206	1	0	0	0	0	0	12519.	24
7	0	0	0	0	0	0	127	1404	1964	2165	2237	2257	2240	2223	2165	2073	1883	1261	15	0	0	0	0	0	22036.	24
8	0	0	0	0	0	0	112	1235	1724	842	1420$	1998	2075#	2067#	2009	1928	1699	1042	8	0	0	0	0	0	17886.$	22
9	0	0	0	0	0	0	103	1217	1366	1459	1516	1269	1132	1033	1430	1297	1237	351	1	0	0	0	0	0	13413.	24
10	0	0	0	0	0	0	2	5	34	728	1375	2055	2289	2264	2198	2110	1454	1129	1	0	0	0	0	0	15643.	24
11	0	0	0	0	0	0	35	435	1334	502	2036	2134	2137	2103	1897	1902	1711	1068	1	0	0	0	0	0	17294.	24
12	0	0	0	0	0	0	70	1181	1716	1883	1961	2006	2008	1989	1932	1811	1553	860	1	0	0	0	0	0	18972.	24
13	0	0	0	0	0	0	5	358	1452	1616	1853	1626	1784	966	745	866	1446	1196	1	0	0	0	0	0	13914.	24
14	0	0	0	0	0	0	145	1622	2027	2156	2230	2268	2271	2265	2214	2111	1922	1250	0	0	0	0	0	0	22481.	24
15	0	0	0	0	0	0	99	1482	1920	2052	2113	2128	2095$	2062	1886	1612	893	622	0	0	0	0	0	0	18966.	24
16	0	0	0	0	0	0	47	535	1161	1137	872	1469	510	791	1118	924	1342	485	0	0	0	0	0	0	10391.	24
17	0	0	0	0	0	0	1	655	1490	1729	1808	1644	1678	1357	999	1409	183	321	0	0	0	0	0	0	13271.	24
18	0	0	0	0	0	0	3	776	1444	1639	1704	1083	730	452	1486	414	1151	573	0	0	0	0	0	0	11454.	24
19	0	0	0	0	0	0	1	5	5	5	5	219	1334	823	1096	1466	1396	522	0	0	0	0	0	0	6876.	24
20	0	0	0	0	0	0	1	5	5	5	10	252	131	48	443	316	580	589	0	0	0	0	0	0	2384.	24
21	0	0	0	0	0	0	1	5	62	122	332	208	862	1633	1246	1606	1127	544	0	0	0	0	0	0	7749.	24
22	0	0	0	0	0	0	1	5	5	9	438$	868	1297	1236	978	309	571	28	0	0	0	0	0	0	5744.	24
23	0	0	0	0	0	0	1	5	4	5	1372	2279	2326	2330	2268	2158	1960	1112	0	0	0	0	0	0	15820.	24
24	0	0	0	0	0	0	47	1428	2024	2235	2304	2313	2317	2275	2220	2102	1885	997	0	0	0	0	0	0	22148.	24
25	0	0	0	0	0	0	35	1326	1937	2109	2195	2239	2241	2235	2183	2071	1828	893	0	0	0	0	0	0	21291.	24
26	0	0	0	0	0	0	22	1342	1951	2141	2236	2295	2294#	2276#	2221#	2111	1682	870	0	0	0	0	0	0	99999.#	21
27	0	0	0	0	0	0	6	1231	1887	2088	2188	2230	2232	2177	2150	2039	1748	731	0	0	0	0	0	0	20707.	24
28	0	0	0	0	0	0	1	696%	1595	1964	2061	2094	2110	2095	2018	1903	1621	830	0	0	0	0	0	0	18787.	24
29	0	0	0	0	0	0	0	22	4#	5#	5#	5	5	5	5	5	131	30	0	0	0	0	0	0	99999.#	21
30	0	0	0	0	0	0	0	5	5	5	4	5	5	5	5	6	7	5	0	0	0	0	0	0	54.	24
31	0	0	0	0	0	0	0	5	5	5	5	5	5	5	5	5	5	4	0	0	0	0	0	0	53.	24
AV	0	0	0	0	0	0	61$	730$	1169$	1206$	1454$	1540$	1526$	1493$	1411$	1362$	1261$	721$	2$	0	0	0	0	0	13956.$	
HR	31	31	31	31	31	31	30	29	28	29	28	28	28	28	28	28	28	30	30	31	31	31	31	31		709

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-51

ATLANTA (GA TECH) YEAR 1979 MONTH 10

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	203$	405	1029	1583%	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	9999*	0	0	0	0	0	99999.*	14
2	0	0	0	0	0	0	21%	182%	1196%	1160	897%	9999*	9999*	9999*	9999%	1%	1090	393	6	0	0	0	0	0	99999.*	15
3	0	0	0	0	0	0	16	440	1174	1864	2445	2800	2838	2790	2411	1834	1086	343	3	0	0	0	0	0	20157.	24
4	0	0	0	0	0	0	2	4%	56%	505	1045	81%	113%	21%	89	17%	4%	78	11	0	0	0	0	0	99999.*	17
5	0	0	0	0	0	0	18	468	1200	1871	2370	2582	2429	2843	2443	1838	1115	352	3	0	0	0	0	0	19529.	24
6	0	0	0	0	0	0	28	361	753	1914	2410	2770	2845	2673	1442	554	646	227	2	0	0	0	0	0	16625.	24
7	0	0	0	0	0	0	14	439	1212	1918	2472	2811	2810	2759	2366	1790	1053	306	1	0	0	0	0	0	20053.	24
8	0	0	0	0	0	0	12	394	1111	1445	2086$	2727	2758%	2600%	2226	1684	866	267	1	0	0	0	0	0	18272.$	22
9	0	0	0	0	0	0	10	383	1013	1661	2182	2551	2306	1922	2111	1607	884	197	1	0	0	0	0	0	16828.	24
10	0	0	0	0	0	0	1	126	425	1462	2117	2680	2813	2741	2366	1767	991	292	1	0	0	0	0	0	17882.	24
11	0	0	0	0	0	0	4	272	1019	1460	2240	2621	2748	2624	2154	1706	929	240	1	0	0	0	0	0	18017.	24
12	0	0	0	0	0	0	7	359	1058	1705	2227	2552	2660	2533	2157	1580	868	210	1	0	0	0	0	0	17916.	24
13	0	0	0	0	0	0	2	207	1044	1677	2231	2554	2595	1910	1517	1280	887	248	0	0	0	0	0	0	16154.	24
14	0	0	0	0	0	0	5	378	1122	1823	2374	2699	2816	2692	2284	1681	944	222	0	0	0	0	0	0	19052.	24
15	0	0	0	0	0	0	5	357	1074	1768	2307	2599	2591$	2583	2084	1453	736	268	0	0	0	0	0	0	17824.	24
16	0	0	0	0	0	0	5	211	881	1372	1815	2506	1943	1807	1725	1103	785	147	0	0	0	0	0	0	14299.	24
17	0	0	0	0	0	0	1	249	828	1578	2062	2448	2647	2245	1508	1404	351	104	0	0	0	0	0	0	15527.	24
18	0	0	0	0	0	0	1	268	834	1552	2088	2221	1854	1295	2098	750	678	142	0	0	0	0	0	0	13892.	24
19	0	0	0	0	0	0	1	80	437	484	878	1371	2345	1814	1767	1373	764	140	0	0	0	0	0	0	11466.	24
20	0	0	0	0	0	0	1	76	285	517	862	1528	1370	1026	1316	828	468	143	0	0	0	0	0	0	8433.	24
21	0	0	0	0	0	0	1	94	580	862	1384	1514	2024	2474	1768	1480	676	130	0	0	0	0	0	0	13006.	24
22	0	0	0	0	0	0	1	101	456	784	1374$	1985	2408	2085	1578	771	682	68	0	0	0	0	0	0	12283.	24
23	0	0	0	0	0	0	1	6	72	411	1814	2600	2707	2566	2156	1558	822	160	0	0	0	0	0	0	14873.	24
24	0	0	0	0	0	0	1	275	980	1688	2232	2556	2661	2484	2110	1521	783	143	0	0	0	0	0	0	17463.	24
25	0	0	0	0	0	0	1	261	846	1621	2141	2474	2576	2442	2066	1484	758	130	0	0	0	0	0	0	16901.	24
26	0	0	0	0	0	0	1	250	815	1612	2140	2485	2588%	2449%	1939%	1459	751	120	0	0	0	0	0	0	99999.*	21
27	0	0	0	0	0	0	0	237	895	1578	2080	2395	2481	2326	1967	1388	886	87	0	0	0	0	0	0	16142.	24
28	0	0	0	0	0	0	0	212	865	1532	2033	2353	2456	2301	1916	1358	654	85	0	0	0	0	0	0	15765.	24
29	0	0	0	0	0	0	0	118	250%	58%	337%	166	207	113	119	124	316	35	0	0	0	0	0	0	99999.*	21
30	0	0	0	0	0	0	0	9	125	328	565	638	594	415	348	346	203	8	0	0	0	0	0	0	3582.	24
31	0	0	0	0	0	0	0	11	89	170	218	269	200	208	322	280	108	4	0	0	0	0	0	0	1883.	24
AV	0	0	0	0	0	0	0	11$	243$	809$	1321$	1885$	2185$	2239$	2065$	1729$	1286$	748$	177$	1$	0	0	0	0	14691.$	
HR	31	31	31	31	31	31	30	28	28	29	28	28	26	26	28	28	29	30	30	31	31	31	31	31		710

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

GT 3% ERROR IN MONTHLY AVG:
DAILY AVG =15137

TABLE A-52

ATLANTA (GA TECH) YEAR 1979 MONTH 10

GLOBAL (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	118$	236	650	990M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	9999M	0	0	0	0	0	99999.M	14
2	0	0	0	0	0	0	7M	106M	723M	675	507M	9999M	9999M	9999M	9999M	1M	643	224	2	0	0	0	0	0	99999.M	15
3	0	0	0	0	0	0	7	264	716	1131	1469	1655	1720	1643	1411	1071	647	190	1	0	0	0	0	0	11925.	24
4	0	0	0	0	0	0	2	4M	23M	271	580	23M	37M	4M	31	5M	4M	49	6	0	0	0	0	0	99999.M	17
5	0	0	0	0	0	0	8	287	755	1171	1476	1561	1430	1687	1449	1092	671	204	1	0	0	0	0	0	11794.	24
6	0	0	0	0	0	0	16	219	435	1149	1429	1630	1665	1559	821	295	371	117	1	0	0	0	0	0	9707.	24
7	0	0	0	0	0	0	6	265	740	1157	1476	1667	1712	1624	1389	1050	624	171	1	0	0	0	0	0	11882.	24
8	0	0	0	0	0	0	4	231	662	835	1218$	1596	1606M	1505M	1301	975	558	140	1	0	0	0	0	0	10606.$	22
9	0	0	0	0	0	0	3	222	605	981	1278	1491	1324	1094%	1242	960	521	100	1	0	0	0	0	0	9822.	24
10	0	0	0	0	0	0	1	76	248	885	1288	1645	1771	1675	1431	1086	618	182	1	0	0	0	0	0	10907.	24
11	0	0	0	0	0	0	2	165	642	896	1375	1583	1630	1541	1277	1020	561	140	1	0	0	0	0	0	10832.	24
12	0	0	0	0	0	0	3	215	640	1023	1318	1511	1559	1469	1248	917	510	114	1	0	0	0	0	0	10528.	24
13	0	0	0	0	0	0	1	110	639	1003	1325	1528	1529	1101	869	739	520	138	0	0	0	0	0	0	9503.	24
14	0	0	0	0	0	0	4	257	720	1134	1462	1667	1717	1628	1380	1020	577	129	0	0	0	0	0	0	11695.	24
15	0	0	0	0	0	0	3	234	687	1090	1403	1582	1562$	1543	1244	868	428	157	0	0	0	0	0	0	10804.	24
16	0	0	0	0	0	0	3	122	544	835	1092	1510	1138	1063	1023	624%	463	72	0	0	0	0	0	0	8487.	24
17	0	0	0	0	0	0	1	146	572	954	1233	1446	1538	1290	833%	825	147	42	0	0	0	0	0	0	9026.	24
18	0	0	0	0	0	0	1	164	578	932	1248	1283	1055	699%	1218	390	393	71	0	0	0	0	0	0	8032.	24
19	0	0	0	0	0	0	1	38	239	255	479	769	1356	1035	1012	786	443	86	0	0	0	0	0	0	6479.	24
20	0	0	0	0	0	0	1	34	154	277	468	844	756	556	733	444	238	71	0	0	0	0	0	0	4575.	24
21	0	0	0	0	0	0	1	40	326	475	773	831	1146	1422	1001	846	372	63	0	0	0	0	0	0	7295.	24
22	0	0	0	0	0	0	1	46	245	417	784$	1152	1408	1206	904	418	388	24	0	0	0	0	0	0	6990.	24
23	0	0	0	0	0	0	1	4	34	231	1101	1577	1641	1550	1299	941	496	85	0	0	0	0	0	0	8959.	24
24	0	0	0	0	0	0	1	183	637	1062	1373	1553	1603	1496	1258	910	474	78	0	0	0	0	0	0	10628.	24
25	0	0	0	0	0	0	1	170	601	1002	1308	1498	1545	1455	1226	881	449	68	0	0	0	0	0	0	10205.	24
26	0	0	0	0	0	0	1	163	591	1003	1314	1511	1560M	1470M	1160M	878	449	62	0	0	0	0	0	0	99999.M	21
27	0	0	0	0	0	0	1	153	568	971	1277	1457	1498	1402	1184	842	412	50	0	0	0	0	0	0	9815.	24
28	0	0	0	0	0	0	0	132	544	934	1227	1406	1450	1358	1123	798	381	41	0	0	0	0	0	0	9393.	24
29	0	0	0	0	0	0	0	67	133M	16M	163M	66	89	40	41	51	184	16	0	0	0	0	0	0	99999.M	21
30	0	0	0	0	0	0	0	6	66	175	301	337	307	207	171	174	96	4	0	0	0	0	0	0	1844.	24
31	0	0	0	0	0	0	0	4	34	74	94	120	80	85	149	133	42	3	0	0	0	0	0	0	820.	24
AV	0	0	0	0	0	0	6$	147$	495$	793$	1113$	1303$	1316$	1209$	1010$	751$	437$	96$	1$	0	0	0	0	0	8677.$	
HR	31	31	31	31	31	31	30	29	28	29	28	28	28	28	28	28	29	30	30	31	31	31	31	31		710

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

GT 5% ERROR IN MONTHLY AVG:
DAILY AVG. = 8939.

TABLE A-53

ATLANTA (GA TECH) YEAR 1979 MONTH 10

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	167$	335%	619#	677#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	0	99999.#	13
2	0	0	0	0	0	0	38#	173#	623#	978	885#	9999#	9999#	9999#	9999#	9999#	1#	232%	93	6	0	0	0	0	99999.#	15
3	0	0	0	0	0	0	12	145	237	297	322	361	376	368	305	254	191	96	4	0	0	0	0	0	2970.	24
4	0	0	0	0	0	0	3	5#	76#	505	1022	106#	138#	48#	126	42#	23#	92	16	0	0	0	0	0	99999.#	17
5	0	0	0	0	0	0	6	91	182	196	243	492	492	283	234	193	146	74	2	0	0	0	0	0	2633.	24
6	0	0	0	0	0	0	16	268	363	446	276	318	332	392	982	579	576	217	6	0	0	0	0	0	4772.	24
7	0	0	0	0	0	0	9	105	161	182	202	219	239	239	225	205	165	84	2	0	0	0	0	0	2035.	24
8	0	0	0	0	0	0	7	113	209	821	633$	444	323#	318#	297	262	209	106	3	0	0	0	0	0	4175.$	22
9	0	0	0	0	0	0	8	130	391	647	838	1265	1069	858	847	758	404	167	2	0	0	0	0	0	7385.	24
10	0	0	0	0	0	0	2	131	406	808	711	364	227	224	221	198	327	100	1	0	0	0	0	0	3720.	24
11	0	0	0	0	0	0	3	176	397	1032	284	256	261	276	356	319	181	81	1	0	0	0	0	0	3822.	24
12	0	0	0	0	0	0	6	108	189	236	278	308	333	332	312	283	223	101	1	0	0	0	0	0	2710.	24
13	0	0	0	0	0	0	3	124	361	457	434	783	598	875	873	686	285	63	1	0	0	0	0	0	5543.	24
14	0	0	0	0	0	0	2	55	98$	140	165	175	181	179	166	144	109	39	0	0	0	0	0	0	1455.	24
15	0	0	0	0	0	0	2	66	130	178	213	224	248$	273	272	254	338	158	0	0	0	0	0	0	2358.	24
16	0	0	0	0	0	0	5	124	362	564	1019	1020	1401	1021	802	542	303	96	0	0	0	0	0	0	7259.	24
17	0	0	0	0	0	0	3	130	302	398	451	763	870	881	647	489	296	97	0	0	0	0	0	0	5326.	24
18	0	0	0	0	0	0	4	150	324	449	610	1132	1109	870	819	510	304	87	0	0	0	0	0	0	6368.	24
19	0	0	0	0	0	0	3	115	457	508	897	1148	900	997	835	435	272	96	0	0	0	0	0	0	6663.	24
20	0	0	0	0	0	0	1	97	315	538	871	1258	1241	999	953	650	279	81	0	0	0	0	0	0	7284.	24
21	0	0	0	0	0	0	1	119	584	779	1079	1288	1085	791	672	425	249	76	0	0	0	0	0	0	7149.	24
22	0	0	0	0	0	0	2	128	477	776	925$	1074	1017	826	726	563	513	84	0	0	0	0	0	0	7112.	24
23	0	0	0	0	0	0	1	21	97	427	537	200	175	161	146	129	94	27	0	0	0	0	0	0	2015.	24
24	0	0	0	0	0	0	1	60	123	137	158	175	181	186	171	144	103	28	0	0	0	0	0	0	1487.	24
25	0	0	0	0	0	0	1	57	126	154	174	182	197	189	178	155	115	37	0	0	0	0	0	0	1565.	24
26	0	0	0	0	0	0	1	55	127	177	213	230	283#	442#	292#	208	127	31	0	0	0	0	0	0	99999.#	21
27	0	0	0	0	0	0	1	49	128	170	185	210	217$	223	191	159	117	30	0	0	0	0	0	0	1679.	24
28	0	0	0	0	0	0	0	69	161	208	235	258	265	255	247	206	139	35	0	0	0	0	0	0	2079.	24
29	0	0	0	0	0	0	0	132	266#	81#	351#	189	228	134	136	141	306	40	0	0	0	0	0	0	99999.#	21
30	0	0	0	0	0	0	0	22	145	346	583	652	606	428	363	361	220	18	0	0	0	0	0	0	3745.	24
31	0	0	0	0	0	0	0	19	104	186	235	286	219	226	338	296	128	11	0	0	0	0	0	0	2046.	24
AV	0	0	0	0	0	0	9$	110$	258$	439$	493$	545$	541$	480$	444$	341$	240$	78$	2$	0	0	0	0	0	3980.$	
HR	31	31	31	31	31	31	30	29	27	29	28	28	26	26	28	28	29	30	30	31	31	31	31	31		709

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-54

ATLANTA (GA TECH) YEAR 1979 MONTH 10

LAT. TILTED KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	234$	468	1284	1972#9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	9999#	0	0	0	0	0	99999.#	14
2	0	0	0	0	0	0	40#	233#	1493#	1239	864#	9999#	9999#	9999#	9999#	9999#	1#	1427	585	20	0	0	0	0	99999.#	15
3	0	0	0	0	0	0	31	805	1510	2370	3111	3542	3718	3531	3069	2355	1474	529	13	0	0	0	0	0	25856.	24
4	0	0	0	0	0	0	5	5#	68#	479	1011	106#	131#	41#	109	37#	25#	88	20	0	0	0	0	0	99999.#	17
5	0	0	0	0	0	0	36	673	1610	2482	3136	3340	3081%	3825	3140	2391	1530	559	12	0	0	0	0	0	25615.	24
6	0	0	0	0	0	0	48	430	931	2454	3098	3537	3627	3402	1565	533	694	271	4	0	0	0	0	0	20594.	24
7	0	0	0	0	0	0	31	663	1638	2517	3206	3622	3738	3556	3078	2362	1477	516	7	0	0	0	0	0	26411.	24
8	0	0	0	0	0	0	28	595	1499	1669	2592$	3515	3558#	3362#	2913	2235	1359	442	4	0	0	0	0	0	23554.	$22
9	0	0	0	0	0	0	25	580	1344	2152	2823	3090	2801	2412%	2675	2016	1204	279	1	0	0	0	0	0	21404.	24
10	0	0	0	0	0	0	3	140%	427	1765	2745	3601	3869	3653	3140	2400	1330	483	1	0	0	0	0	0	23556.	24
11	0	0	0	0	0	0	10	366	1381	1758%	3003	3489	3625	3438	2857	2255	1356	435	1	0	0	0	0	0	23953.	24
12	0	0	0	0	0	0	20	583	1505	2319	2992	3405	3513	3342	2927	2153	1274	379	1	0	0	0	0	0	24412.	24
13	0	0	0	0	0	0	8	299	1406	2232	3007	3327	3452	2360	1829	1603	1281	457	1	0	0	0	0	0	21260.	24
14	0	0	0	0	0	0	26	692	1677	2566	3260	3676	3787	3607	3113	2342	1425	447	1	0	0	0	0	0	26619.	24
15	0	0	0	0	0	0	21	651	1613	2486	3194	3549	3508$	3467	2840	2000	989	387	0	0	0	0	0	0	24704.	24
16	0	0	0	0	0	0	15	351	1266	1895	2278	3299	2205	2162	2135	1430	1124	249	0	0	0	0	0	0	18407.	24
17	0	0	0	0	0	0	4	403	1371	2218	2890	3236	3427	3002%	2445$	1887	461	183	0	0	0	0	0	0	21528.	24
18	0	0	0	0	0	0	6	452	1383	2201	2950	2765	2255	1548	2754	934	1010	264	0	0	0	0	0	0	18522.	24
19	0	0	0	0	0	0	3	100	416	438	795	1521%	1889$	2257	2287	1945	1171	261	0	0	0	0	0	0	13083.	24
20	0	0	0	0	0	0	2	91	283	476	789	1122$	1455	1003	1535	989%	685	284	0	0	0	0	0	0	8715.	24
21	0	0	0	0	0	0	1	109	644	918	1661%	1739%	2583%	3322	2530%	2101	1045	265	0	0	0	0	0	0	16919.	24
22	0	0	0	0	0	0	2	113	440	720	1692$	2663%	3256%	2819%	2111	987%	888	105	0	0	0	0	0	0	15776.	24
23	0	0	0	0	0	0	1	19	89	380	2465	3684	3820	3637	3128	2333	1391	381	0	0	0	0	0	0	21329.	24
24	0	0	0	0	0	0	6	601	1613	2534	3233	3628	3752	3530	3045	2267	1344	350	0	0	0	0	0	0	25903.	24
25	0	0	0	0	0	0	5	571	1570	2431	3137	3534	3659	3485	3004	2234	1304	319	0	0	0	0	0	0	25255.	24
26	0	0	0	0	0	0	3	570	1549	2439	3150	3573	3694#	3515#	2849#	2210	1304	307	0	0	0	0	0	0	99999.#	21
27	0	0	0	0	0	0	2	538	1520	2395	3086	3474	3564	3361	2889	2142	1212	264	0	0	0	0	0	0	24447.	24
28	0	0	0	0	0	0	2	480	1471	2333	3020	3412	3524	3339	2832	2087	1169	237	0	0	0	0	0	0	23906.	24
29	0	0	0	0	0	0	1	154	265#	74#	332#	172	205	126	134	138	384	57	0	0	0	0	0	0	99999.#	21
30	0	0	0	0	0	0	1	22	131	300	512	562	529	369	330	329	205	21	0	0	0	0	0	0	3312.	24
31	0	0	0	0	0	0	1	21	97	164	207	254	193	203	294	266	118	14	0	0	0	0	0	0	1831.	24
AV	0	0	0	0	0	0	19$	391$	1130$	1738$	2488$	2889$	2888$	2714$	2311$	1747$	1091$	314$	3$	0	0	0	0	0	19676.$	
HR	31	31	31	31	31	31	30	29	28	29	28	28	28	28	28	28	29	30	30	31	31	31	31	31		710

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-55

ATLANTA (GA TECH) YEAR 1979 MONTH 10

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	8$	18	45	71%	9999%	9999%	9999%	9999%	9999%	9999%	9999%	9999%	9999%	0	0	0	0	0	99999.%	14
2	0	0	0	0	0	0	1%	7%	51%	59	55%	9999%	9999%	9999%	9999%	0%	46	15	0	0	0	0	0	0	99999.%	15
3	0	0	0	0	0	0	0	17	50	86	118	139	146	136	114	83	46	14	0	0	0	0	0	0	949.	24
4	0	0	0	0	0	0	0	1%	4%	31	62	5%	8%	1%	7	1%	1%	1	0	0	0	0	0	0	99999.%	17
5	0	0	0	0	0	0	0	16	51	89	119	134	129	141	118	84	47	13	0	0	0	0	0	0	943.	24
6	0	0	0	0	0	0	0	12	38	86	118	135	139	128	72	30	28	9	0	0	0	0	0	0	793.	24
7	0	0	0	0	0	0	0	16	51	88	120	139	145	135	112	80	44	12	0	0	0	0	0	0	943.	24
8	0	0	0	0	0	0	0	15	47	70	101$	131	133%	122%	100	71	39	10	0	0	0	0	0	0	838.$	22
9	0	0	0	0	0	0	0	14	43	78	105	122	115	100	98	67	38	10	0	0	0	0	0	0	790.	24
10	0	0	0	0	0	0	0	7	26	74	112	141	152	141	115	81	43	10	0	0	0	0	0	0	903.	24
11	0	0	0	0	0	0	0	13	45	68	107	134	142	131	102	74	39	10	0	0	0	0	0	0	863.	24
12	0	0	0	0	0	0	0	14	45	78	108	126	129	119	99	68	35	9	0	0	0	0	0	0	831.	24
13	0	0	0	0	0	0	0	11	44	77	108	127	130	96	79	61	38	9	0	0	0	0	0	0	780.	24
14	0	0	0	0	0	0	0	14	48	85	118	136	140	130	105	73	37	8	0	0	0	0	0	0	896.	24
15	0	0	0	0	0	0	0	13	46	82	113	131	127$	123	96	84	32	9	0	0	0	0	0	0	837.	24
16	0	0	0	0	0	0	0	11	41	66	90	119	96	88	75	55	32	7	0	0	0	0	0	0	677.	24
17	0	0	0	0	0	0	0	12	41	72	97	116	122	107	79	60	27	6	0	0	0	0	0	0	739.	24
18	0	0	0	0	0	0	0	11	41	72	98	102	93	73	87	47	29	8	0	0	0	0	0	0	681.	24
19	0	0	0	0	0	0	0	8	24	30	52	80	119	93	84	62	31	8	0	0	0	0	0	0	588.	24
20	0	0	0	0	0	0	0	3	16	31	52	94	80	60	71	47	28	6	0	0	0	0	0	0	488.	24
21	0	0	0	0	0	0	0	5	32	47	80	88	105	118	88	65	31	6	0	0	0	0	0	0	663.	24
22	0	0	0	0	0	0	0	8	27	47	78$	106	118	105	77	43	29	5	0	0	0	0	0	0	640.	24
23	0	0	0	0	0	0	0	1	5	25	86	132	135	125	101	86	32	5	0	0	0	0	0	0	728.	24
24	0	0	0	0	0	0	0	10	41	77	109	126	131	120	97	85	31	5	0	0	0	0	0	0	812.	24
25	0	0	0	0	0	0	0	9	41	75	104	122	127	118	95	64	30	5	0	0	0	0	0	0	790.	24
26	0	0	0	0	0	0	0	9	38	71	100	120	125%	115%	86%	60	29	4	0	0	0	0	0	0	99999.%	21
27	0	0	0	0	0	0	0	9	38	71	99	114	116	105	85	57	26	4	0	0	0	0	0	0	723.	24
28	0	0	0	0	0	0	0	8	37	69	97	113	118	108	88	57	28	4	0	0	0	0	0	0	722.	24
29	0	0	0	0	0	0	0	5	13%	5%	23%	13	16	9	8	8	14	2	0	0	0	0	0	0	99999.%	21
30	0	0	0	0	0	0	0	1	6	20	36	40	38	27	22	21	12	1	0	0	0	0	0	0	224.	24
31	0	0	0	0	0	0	0	1	5	12	15	19	15	15	22	17	6	1	0	0	0	0	0	0	126.	24
AV	0	0	0	0	0	0	0$	10$	38$	63$	93$	111$	112$	102$	82$	58$	32$	7$	0$	0	0	0	0	0	707.$	
HR	31	31	31	31	31	31	30	29	28	29	28	28	26	26	28	28	29	30	30	31	31	31	31	31		710

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

GT 3% ERROR IN MONTHLY AVG:
DAILY AVG = 1728.

TABLE A-56

ATLANTA (GA TECH) YEAR 1979 MONTH 10

AVAILABLE SUNSHINE %

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	0	0	60	100	100	100	100	100	100	100	90	70	0	0	0	0	0	0	0	75.	24
2	0	0	0	0	0	0	0	30	100	25	80	90	100	100	100	100	92	100	0	0	0	0	0	0	81.	24
3	0	0	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	98	0	0	0	0	0	0	94.	24
4	0	0	0	0	0	0	0	0%	0%	0	0	0%	0%	0%	0	0%	0%	0	0	0	0	0	0	0	0.	24
5	0	0	0	0	0	0	0	100	100	100	100	89	85	100	100	100	100	100	0	0	0	0	0	0	91.	24
6	0	0	0	0	0	0	0	43	38	98	100	100	100	100	38	0	17	17	0	0	0	0	0	0	56.	24
7	0	0	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	97	0	0	0	0	0	0	95.	24
8	0	0	0	0	0	0	0	100	100	44	100	100	100	100	100	100	100	78	0	0	0	0	0	0	88.	24
9	0	0	0	0	0	0	0	100	100	100	100	100	100	58	87	88	100	22	0	0	0	0	0	0	81.	24
10	0	0	0	0	0	0	0	0	3	41	80	98	100	100	100	100	88	78	0	0	0	0	0	0	69.	24
11	0	0	0	0	0	0	0	31	77	38	100	100	100	100	98	100	100	85	0	0	0	0	0	0	82.	24
12	0	0	0	0	0	0	0	96	100	100	100	100	100	100	100	100	100	74	0	0	0	0	0	0	94.	24
13	0	0	0	0	0	0	0	30	100	100	100	100	100	58	49	81	98	92	0	0	0	0	0	0	79.	24
14	0	0	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	91	0	0	0	0	0	0	97.	24
15	0	0	0	0	0	0	50$	99	100	100	100	100	100$	100	100	99	69	51	0	0	0	0	0	0	92.	24
16	0	0	0	0	0	0	0	43	93	100	78	93	41	48	66	61	95	34	0	0	0	0	0	0	67.	24
17	0	0	0	0	0	0	29$	59	100	100	98	87	89	79	58	83	11	21	0	0	0	0	0	0	72.	24
18	0	0	0	0	0	0	0	65	100	100	99	65	44	28	84	24	86	53	0	0	0	0	0	0	67.	24
19	0	0	0	0	0	0	0	0	0	0	0	15	75	48	68	90	99	48	0	0	0	0	0	0	40.	24
20	0	0	0	0	0	0	0	0	0	0	0	19	11	3	29	21	43	56	0	0	0	0	0	0	16.	24
21	0	0	0	0	0	0	0	0	5	9	24	14	52	90	72	95	79	0	0	0	0	0	0	0	40.	24
22	0	0	0	0	0	0	0	0	0	0	50	54	76	72	64	23	50	0	0	0	0	0	0	0	35.	24
23	0	0	0	0	0	0	0	0	0	0	63	100	100	100	100	100	100	36	0	0	0	0	0	0	83.	24
24	0	0	0	0	0	0	0	95	100	100	100	100	100	100	100	100	100	37	0	0	0	0	0	0	94.	24
25	0	0	0	0	0	0	0	92	100	100	100	100	100	100	99	100	100	38	0	0	0	0	0	0	94.	24
26	0	0	0	0	0	0	0	91	100	100	100	100	100	100	100	100	100	38	0	0	0	0	0	0	93.	24
27	0	0	0	0	0	0	44$	89	100	100	100	100	100	100	100	100	100	50$	0	0	0	0	0	0	99.	24
28	0	0	0	0	0	0	0	73	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	0	80.	24
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	1.	24
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
AV	0	0	0	0	0	0	0	52	85	85	78	73	74	72	73	72	75	49	0	0	0	0	0	0	82.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
X - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

BT 3% ERROR IN MONTHLY AVG:
DAILY AVG =) 66.

TABLE A-57

ATLANTA (GA TECH) YEAR 1979 MONTH 11

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	3	3	3	3	3	18	3	3	6	35	2	0	0	0	0	0	0	80.	24
2	0	0	0	0	0	0	0	2	3	3	3	5	3	13	3	3	3	43	0	0	0	0	0	0	82.	24
3	0	0	0	0	0	0	0	1019	2781	3254	3460	3512	3500	3376	3362	2988	2182	762%	0	0	0	0	0	0	30196.	24
4	0	0	0	0	0	0	0	897	2731	3184	3399	3500	3518	3467	3313	3039	2444	778%	0	0	0	0	0	0	30269.	24
5	0	0	0	0	0	0	0	769	2759	3149	3247	3446	3263	3342	2845	$2348	2173	381	0	0	0	0	0	0	27740.	24
6	0	0	0	0	0	0	0	3	23	408	1415	1682	1708	1909	2428	2349	1645	172	0	0	0	0	0	0	13741.	24
7	0	0	0	0	0	0	0	808	2541	3112	3299	3404	3368	3360	3201	2916	2261	553%	0	0	0	0	0	0	28824.	24
8	0	0	0	0	0	0	0	2	208	54	71	1233	1546	1235	1458	978	42	2	0	0	0	0	0	0	6828.	24
9	0	0	0	0	0	0	0	6	271	129	142	676	2066	1222	21	3	3	2	0	0	0	0	0	0	4542.	24
10	0	0	0	0	0	0	0	3	3	4	3	3	17	3	162	477	3	2	0	0	0	0	0	0	678.	24
11	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	25.	24
12	0	0	0	0	0	0	0	18	2	2	2	3	2	2	3	2	2	2	0	0	0	0	0	0	25.	24
13	0	0	0	0	0	0	0	2	2	2	20	2	12	78	32	496	898	243	0	0	0	0	0	0	1786.	24
14	0	0	0	0	0	0	0	951%	2569	3133	3356	3462	3410	3302	3136	2837	2159	477%	0	0	0	0	0	0	28793.	24
15	0	0	0	0	0	0	0	783%	2385	3072	2830	3349	3306	3383	3246	2966	2252	536%	0	0	0	0	0	0	28109.	24
16	0	0	0	0	0	0	0	607	2307	2857	3132	3235	3274	3233	3138	2823	2075	393%	0	0	0	0	0	0	27076.	24
17	0	0	0	0	0	0	0	647	2289	2839	3118	3243	3252	3222	3142	2830	2032	372%	0	0	0	0	0	0	26966.	24
18	0	0	0	0	0	0	0	719%	2379	2830	2894	2876	3187	3184	3022	2483	1944	270%	0	0	0	0	0	0	25796.	24
19	0	0	0	0	0	0	0	412	2107	2799	2944	$3088	3058	3037	2878	2546	1775	289	0	0	0	0	0	0	24933.	24
20	0	0	0	0	0	0	0	412	1846	2538	2880	2997	3001	2829	2626	2209	1854	278	0	0	0	0	0	0	23448.	24
21	0	0	0	0	0	0	0	16	1020	2162	2004	2238	1598	2147	2196	1979	1459	28	0	0	0	0	0	0	16646.	24
22	0	0	0	0	0	0	0	2	9	344	2200	2304	1284	618	983	18	390	2	0	0	0	0	0	0	8152.	24
23	0	0	0	0	0	0	0	2	3	3	368	100	369	102	583	344	11	2	0	0	0	0	0	0	1888.	24
24	0	0	0	0	0	0	0	2	3	3	3	3	3	3	3	3	8	2	0	0	0	0	0	0	29.	24
25	0	0	0	0	0	0	0	2	3	3	3	3	3	3	3	3	3	2	0	0	0	0	0	0	32.	24
26	0	0	0	0	0	0	0	620%	2351	3024	3208	$3392	3373	3338	3224	2917	2173	386%	0	0	0	0	0	0	28005.	24
27	0	0	0	0	0	0	0	637%	2377	2951	3188	3360	3414	3375	3253	2941	1793	322%	0	0	0	0	0	0	27611.	24
28	0	0	0	0	0	0	0	2	3	2	45	75	1289	2164	2607	2802	1970	366%	0	0	0	0	0	0	11325.	24
29	0	0	0	0	0	0	0	592%	2231	1872	1465	1998	2060	2470	3077	2348	581	1	0	0	0	0	0	0	18494.	24
30	0	0	0	0	0	0	0	599%	2370	3036	3301	3431	3476	3440	3264	2890	2245	378%	0	0	0	0	0	0	28430.	24
AV	0	0	0	0	0	0	0	351	1252	1552	1733	1887	1946	1929	1907	1685	1214	235	0	0	0	0	0	0	15692.	
HR	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		720

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-58

ATLANTA (GA TECH) YEAR 1979 MONTH 11

DIRECT (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	5	5	5	5	5	13	5	5	6	31	4	0	0	0	0	0	0	86.	24
2	0	0	0	0	0	0	0	4	4	4	4	5	4	5	4	5	5	43	0	0	0	0	0	0	92.	24
3	0	0	0	0	0	0	0	833	2028	2250	2355	2380	2367	2332	2280	2092	1640	883%	0	0	0	0	0	0	21262.	24
4	0	0	0	0	0	0	0	461#	1811#	2142	2297	2341	2348	2341	2279	2184	1911	706%	0	0	0	0	0	0	20521.	$22
5	0	0	0	0	0	0	0	1020$	2039	2184	2197	2332	2231	2271	1944	$1616%	1667%	338	0	0	0	0	0	0	19838.	24
6	0	0	0	0	0	0	0	4	17	284	1006	1184	1196%	1339	1739	1738	1352	163	0	0	0	0	0	0	10021.	24
7	0	0	0	0	0	0	0	398#	1467#	2098	2254	2288	2263	2265	2202	2086	1765	502%	0	0	0	0	0	0	19629.	$22
8	0	0	0	0	0	0	0	4	145	39	46	804	1010	828	996	696	37	4	0	0	0	0	0	0	4808.	24
9	0	0	0	0	0	0	0	7	222	97	104	463	1389	837	17	5	5	4	0	0	0	0	0	0	3150.	24
10	0	0	0	0	0	0	0	4	5	5	5	5	12	5	114	348	5	3	0	0	0	0	0	0	510.	24
11	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	3	0	0	0	0	0	0	45.	24
12	0	0	0	0	0	0	0	28	4	4	4	4	4	4	4	4	4	3	0	0	0	0	0	0	44.	24
13	0	0	0	0	0	0	0	4	4	4	14	4	9	68	28	371	778%	253	0	0	0	0	0	0	1539.	24
14	0	0	0	0	0	0	0	812%	1914	2180	2300	2284	2280	2219	2151	2158	1677	436%	0	0	0	0	0	0	20391.	24
15	0	0	0	0	0	0	0	374#	1311#	1968	1907	2278	2269	2313	2297	2119	1773	502%	0	0	0	0	0	0	19295.	$22
16	0	0	0	0	0	0	0	456	1757	2012	2294	2174	2216	2196	2169	2001	1644	379%	0	0	0	0	0	0	19298.	24
17	0	0	0	0	0	0	0	132#	740#	1434#	1999	2160	2170	2188	2139	2010	1615	353	0	0	0	0	0	0	99999.	#21
18	0	0	0	0	0	0	0	469%	1676	2004	1976	1947	2167	2177	2090	1811	1580	262%	0	0	0	0	0	0	18160.	24
19	0	0	0	0	0	0	0	329	1604	1970	2019	$2068	2045	2041	1980	1832	1437	281	0	0	0	0	0	0	17808.	24
20	0	0	0	0	0	0	0	381	1442	1797	1937	2001	1996	1898	1793	1575	1453	283	0	0	0	0	0	0	16536.	24
21	0	0	0	0	0	0	0	16	765	1515	1356	1485	1060	1450	1531	1460	1199	31	0	0	0	0	0	0	11871.	24
22	0	0	0	0	0	0	0	3	9	249	1536	1552	862	425	704	16	342	4	0	0	0	0	0	0	5702.	24
23	0	0	0	0	0	0	0	4	5	5	225	61	227	67	393	247	12	3	0	0	0	0	0	0	1249.	24
24	0	0	0	0	0	0	0	3	4	4	4	4	4	5	5	5	5	3	0	0	0	0	0	0	46.	24
25	0	0	0	0	0	0	0	3	5	5	5	5	5	5	5	5	5	3	0	0	0	0	0	0	50.	24
26	0	0	0	0	0	0	0	549%	1787	2110	2178	$2246	2239	2226	2186	2058	1893	363%	0	0	0	0	0	0	19635.	24
27	0	0	0	0	0	0	0	568%	1808	2074	2169	2235	2257	2244	2206	2080	1412	308	0	0	0	0	0	0	19359.	24
28	0	0	0	0	0	0	0	3	4	4	30	52	863	1465	1803	2019	1601	351%	0	0	0	0	0	0	8195.	24
29	0	0	0	0	0	0	0	540%	1759	1206	1010	1359	1393	1677	2140	1731	481	2	0	0	0	0	0	0	13298.	24
30	0	0	0	0	0	0	0	547%	1845	2151	2255	2307	2327	2300	2228	2044	1758	352%	0	0	0	0	0	0	20113.	24
AV	0	0	0	0	0	0	0	253$	802$	1047$	1183	1268	1308	1306	1315	1210	963	220	0	0	0	0	0	0	10876.	$
HR	30	30	30	30	30	30	30	26	26	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30		711

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-59

ATLANTA (GA TECH) YEAR 1979 MONTH 11

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	7	87	193	266	370	954	489	421	446	350	37	0	0	0	0	0	0	3620.	24
2	0	0	0	0	0	0	0	67	214	242	653	750	810	1061	633	468	242	39	0	0	0	0	0	0	5178.	24
3	0	0	0	0	0	0	0	176	883	1656	2087	2439	2556	2373	1986	1377	658	83	0	0	0	0	0	0	16174.	24
4	0	0	0	0	0	0	0	164	821	1500	2036	2373	2460	2320	1930	1336	774	81	0	0	0	0	0	0	15796.	24
5	0	0	0	0	0	0	0	161	822	1495	1997	2369	2381	2282	1818$	1354	739	73	0	0	0	0	0	0	15491.	24
6	0	0	0	0	0	0	0	62	442	825	1536	1893	1945	1701	1667	1182	527	49	0	0	0	0	0	0	11829.	24
7	0	0	0	0	0	0	0	149	785	1466	1938	2270	2332	2195	1821	1261	580	54	0	0	0	0	0	0	14851.	24
8	0	0	0	0	0	0	0	56	454	641	938	1856	1998	1587	1438	876	259	20	0	0	0	0	0	0	10121.	24
9	0	0	0	0	0	0	0	13	438	565	774	1429	2309	1539	333	83	120	16	0	0	0	0	0	0	7817.	24
10	0	0	0	0	0	0	0	4	131	434	370	276	716	797	704	902	76	9	0	0	0	0	0	0	4418.	24
11	0	0	0	0	0	0	0	3	76	165	374	326	365	124	59	86	28	2	0	0	0	0	0	0	1608.	24
12	0	0	0	0	0	0	0	67$	114	289	432	555	446	311	181	172	133	2	0	0	0	0	0	0	2691.	24
13	0	0	0	0	0	0	0	19	269	300	748	416	807	930	760	889	443	38	0	0	0	0	0	0	5619.	24
14	0	0	0	0	0	0	0	116	708	1386	1909	2217	2288	2138	1776	1199	526	38	0	0	0	0	0	0	14302.	24
15	0	0	0	0	0	0	0	111	666	1322	1594	2125	2200	2118	1764	1194	515	36	0	0	0	0	0	0	13645.	24
16	0	0	0	0	0	0	0	95	638	1275	1789	2090	2187	2048	1712	1144	480	28	0	0	0	0	0	0	13487.	24
17	0	0	0	0	0	0	0	95	620	1251	1750	2060	2151	2027	1708	1140	475%	27	0	0	0	0	0	0	13303.	24
18	0	0	0	0	0	0	0	94	630	1247	1800	1934	2155	2036	1683	1134	464	31	0	0	0	0	0	0	13209.	24
19	0	0	0	0	0	0	0	68	577	1204	1583$	1962	2045	1926	1588	1036	410	18	0	0	0	0	0	0	12415.	24
20	0	0	0	0	0	0	0	65	539	1143	1644	1934	2027	1880	1531	973	468	26	0	0	0	0	0	0	12229.	24
21	0	0	0	0	0	0	0	47	549	1156	1685	2053	1760	1790	1440	941	483	20	0	0	0	0	0	0	11924.	24
22	0	0	0	0	0	0	0	63	370	838	2010	1970	1720	1320	1252	442	288	6	0	0	0	0	0	0	10277.	24
23	0	0	0	0	0	0	0	34	86	352	1125	996	1174	946	1122	691	148	13	0	0	0	0	0	0	6688.	24
24	0	0	0	0	0	0	0	3	17	130	245	454	360	192	56	235	9	2	0	0	0	0	0	0	1703.	24
25	0	0	0	0	0	0	0	20	120	162	213	252	256	185	74	232	92	2	0	0	0	0	0	0	1610.	24
26	0	0	0	0	0	0	0	55	545	1171	1594$	2017	2109	1966	1661	1102	463	23	0	0	0	0	0	0	12717.	24
27	0	0	0	0	0	0	0	59	546	1164	1667	1984	2086	1967	1637	1101	443	31	0	0	0	0	0	0	12667.	24
28	0	0	0	0	0	0	0	2	97	114	538	525	1482	1584	1498	1090	445	24	0	0	0	0	0	0	7499.	24
29	0	0	0	0	0	0	0	51	565	1039	1276	1715	1834	1853	1764	1141	343	5	0	0	0	0	0	0	11587.	24
30	0	0	0	0	0	0	0	46	530	1163	1701	2013	2114	1999	1658	1095	469	23	0	0	0	0	0	0	12811.	24
AV	0	0	0	0	0	0	0	65	445	860	1276	1624	1668	1524	1258	877	381	29	0	0	0	0	0	0	9903.	
HR	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		720

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-60

ATLANTA (GA TECH) YEAR 1979 MONTH 11

GLOBAL (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	4	35	90	123	178	508	244	207	230	182	15	0	0	0	0	0	0	1817.	24
2	0	0	0	0	0	0	0	34	116	128	358	409	442	591	340	248	125	20	0	0	0	0	0	0	2811.	24
3	0	0	0	0	0	0	0	112	571	967	1272	1477	1549	1433	1194	831	399	44	0	0	0	0	0	0	9850.	24
4	0	0	0	0	0	0	0	113	550	952	1252	1451	1502	1410	1173	823	383	36	0	0	0	0	0	0	9646.	24
5	0	0	0	0	0	0	0	105	535	934	1222	1442	1441	1380	11028	825	455	39	0	0	0	0	0	0	9481.	24
6	0	0	0	0	0	0	0	34	261	493	938	1151	1182	1015	997	709	314	22	0	0	0	0	0	0	7116.	24
7	0	0	0	0	0	0	0	98	514	933	1224	1408	1441	1350	1107	770	351	26	0	0	0	0	0	0	9220.	24
8	0	0	0	0	0	0	0	30	274	368	544	1124	1191	943	850	506	138	8	0	0	0	0	0	0	5978.	24
9	0	0	0	0	0	0	0	8	265	317	433	822	1354	867	159	25	53	4	0	0	0	0	0	0	4307.	24
10	0	0	0	0	0	0	0	4	62	233	195	142	367	433	395	532	28	3	0	0	0	0	0	0	2414.	24
11	0	0	0	0	0	0	0	3	35	79	189	162	176	52	25	42	13	2	0	0	0	0	0	0	781.	24
12	0	0	0	0	0	0	0	28$	55	152	231	303	237	161	89	88	71	3	0	0	0	0	0	0	1418.	24
13	0	0	0	0	0	0	0	7	145	159	425	219	451	530	426	537	268	17	0	0	0	0	0	0	3183.	24
14	0	0	0	0	0	0	0	79	476	882	1190	1379	1412	1314	1090	747	326	19	0	0	0	0	0	0	8913.	24
15	0	0	0	0	0	0	0	79	447	858	988	1320	1356	1277	1055	713	298	13	0	0	0	0	0	0	8403.	24
16	0	0	0	0	0	0	0	54	404	790	1065	1265	1313	1220	1011	672	266	8	0	0	0	0	0	0	8069.	24
17	0	0	0	0	0	0	0	46	383	767	1058	1248	1292	1209	1005	667	258	7	0	0	0	0	0	0	7941.	24
18	0	0	0	0	0	0	0	49	393	778	1103	1174	1298	1218	992	620	250	6	0	0	0	0	0	0	7881.	24
19	0	0	0	0	0	0	0	33	356	749	968$	1187	1225	1145	939	610	218	4	0	0	0	0	0	0	7434.	24
20	0	0	0	0	0	0	0	31	331	702	988	1183	1203	1104	884	551	255	7	0	0	0	0	0	0	7218.	24
21	0	0	0	0	0	0	0	13	320	898	1002	1215	1021	1046	838	543	265	5	0	0	0	0	0	0	8962.	24
22	0	0	0	0	0	0	0	19	173	453	1189	1147	975	728%	896%	208	127	3	0	0	0	0	0	0	5715.	24
23	0	0	0	0	0	0	0	7	22	158	607	519%	627	490%	609	359	47	3	0	0	0	0	0	0	3446.	24
24	0	0	0	0	0	0	0	3	4	37	92	208	155	83	5	100	4	2	0	0	0	0	0	0	672.	24
25	0	0	0	0	0	0	0	3	30	48	68	83	85	50	9	84	26	3	0	0	0	0	0	0	492.	24
26	0	0	0	0	0	0	0	25	330	716	1045*	1203*	1245*	1156*	971	639	245%	5	0	0	0	0	0	0	99999.*	20
27	0	0	0	0	0	0	0	25	323	707	1006	1191	1232%	1159%	971	642	236	7	0	0	0	0	0	0	7499.	24
28	0	0	0	0	0	0	0	2	29	28	262	309	836%	916	887	647	251	7	0	0	0	0	0	0	4175.	24
29	0	0	0	0	0	0	0	24	358	643	759	1037	1097	1115	1085	703	192	2	0	0	0	0	0	0	7015.	24
30	0	0	0	0	0	0	0	24	340	743	1067	1258	1321	1239	1021	662	272	8	0	0	0	0	0	0	7952.	24
AV	0	0	0	0	0	0	0	37	271	519	753$	896$	976$	886$	738	511	211	12	0	0	0	0	0	0	5609.$	
HR	30	30	30	30	30	30	30	30	30	30	29	29	29	29	30	30	30	30	30	30	30	30	30	30		716

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-61

ATLANTA (GA TECH) YEAR 1979 MONTH 11

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	19	110	213	285	390	952	508	441	463	361	52	0	0	0	0	0	0	3794.	24
2	0	0	0	0	0	0	0	79	234	263	663	758	817	1056	647	480	253	44	0	0	0	0	0	0	5295.	24
3	0	0	0	0	0	0	0	151	9999#	9999#	391#	262	256	242	188	164	145	27	0	0	0	0	0	0	99999.#	21
4	0	0	0	0	0	0	0	36	90	134	168	184	191	182	169	150	107	14	0	0	0	0	0	0	1426.	24
5	0	0	0	0	0	0	0	40	105	163	236	227	254	219%	226#	454#	259%	46	0	0	0	0	0	0	1938.$	22
6	0	0	0	0	0	0	0	64	434	536	761	854	862%	563%	421	291	182	42	0	0	0	0	0	0	5109.	24
7	0	0	0	0	0	0	0	45	133	171	203	218	224	208	168	158	104	15	0	0	0	0	0	0	1668.	24
8	0	0	0	0	0	0	0	56	393	616	886	1086	1016	665	676	480	267	28	0	0	0	0	0	0	6371.	24
9	0	0	0	0	0	0	0	17	377	519	711	1012	1023	816	350	113	141	24	0	0	0	0	0	0	5102.	24
10	0	0	0	0	0	0	0	8	152	453	389	295	715	803	829	710	92	16	0	0	0	0	0	0	4262.	24
11	0	0	0	0	0	0	0	4	90	182	389	347	386	148	84	107	47	4	0	0	0	0	0	0	1788.	24
12	0	0	0	0	0	0	0	82$	125	298	436	556	452	319	195	185	146	4	0	0	0	0	0	0	2780.	24
13	0	0	0	0	0	0	0	20	267	297	725	412	787	871	731	701%	261%	22	0	0	0	0	0	0	5093.	24
14	0	0	0	0	0	0	0	29	110	150	174	205	238	258	237#	175#	104	11	0	0	0	0	0	0	1601.$	22
15	0	0	0	0	0	0	0	24	103	131	148	203	279	218	185$	151	97	13	0	0	0	0	0	0	1551.	24
16	0	0	0	0	0	0	0	38	132	189	222#	9999#	9999#	234	207	164	107	19	0	0	0	0	0	0	99999.#	21
17	0	0	0	0	0	0	0	39	121	176	199	227	243	241	215	176	125	28	0	0	0	0	0	0	1790.	24
18	0	0	0	0	0	0	0	41	120	197	367	315	296	278	249	226	127	18	0	0	0	0	0	0	2233.	24
19	0	0	0	0	0	0	0	36	134	173	208$	244	276	282	238	180	106	14	0	0	0	0	0	0	1868.	24
20	0	0	0	0	0	0	0	45	167	229	272	292	309#	9999#	9999#	9999#	321#	48	0	0	0	0	0	0	99999.#	19
21	0	0	0	0	0	0	0	62	328#	358#	735	818	842	631	423	283	243	36	0	0	0	0	0	0	4737.$	22
22	0	0	0	0	0	0	0	83	390	713	964	718	990	997	793	467	258	19	0	0	0	0	0	0	6392.	24
23	0	0	0	0	0	0	0	61$	123	384	961	957	977	907	843	586	185	31	0	0	0	0	0	0	6013.	24
24	0	0	0	0	0	0	0	10	42	155	268	475	388	221	84	259	29	8	0	0	0	0	0	0	1940.	24
25	0	0	0	0	0	0	0	40	156	199	249	292	290	219	111	266	127	10	0	0	0	0	0	0	1961.	24
26	0	0	0	0	0	0	0	23	101	141	168$	195	218	209	191	163	104	16	0	0	0	0	0	0	1530.	24
27	0	0	0	0	0	0	0	24	101	180	188	204	205	205	184	159	153	30	0	0	0	0	0	0	1613.	24
28	0	0	0	0	0	0	0	9	115	132	525	587	756	448	316	175	109	13	0	0	0	0	0	0	3185.	24
29	0	0	0	0	0	0	0	19	158	484	583	651	684	555	373	363	238	11	0	0	0	0	0	0	4119.	24
30	0	0	0	0	0	0	0	16	91	143	182	202	201	191	191	160	88	10	0	0	0	0	0	0	1473.	24
AV	0	0	0	0	0	0	0	40	167$	275$	430$	455$	529$	444$	345$	288$	157$	22	0	0	0	0	0	0	3153.$	
HR	30	30	30	30	30	30	30	30	28	28	28	29	28	29	27	27	29	30	30	30	30	30	30	30		708

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-62

ATLANTA (GA TECH) YEAR 1979 MONTH 11

LAT. TILTED KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	20	100	190	247	337	885	434	382	437	396	52	0	0	0	0	0	0	3480.	24
2	0	0	0	0	0	0	0	77	214	245	606	693	716	1029	587	429	231	63	0	0	0	0	0	0	4891.	24
3	0	0	0	0	0	0	0	424	1618	2501	3214	3657	3775	3554	3024	2203	1216	245	0	0	0	0	0	0	25429.	24
4	0	0	0	0	0	0	0	406	1559	2450	3151	3563	3669	3474	2951	2187	1257	229	0	0	0	0	0	0	24897.	24
5	0	0	0	0	0	0	0	392	1543	2422	3091	3571	3576	3453	2747	$2041	1277	173	0	0	0	0	0	0	24287.	24
6	0	0	0	0	0	0	0	76	489	1059	%2483	#3060	#2850	%2703	$2557	1920	997	107	0	0	0	0	0	0	17497.	$22
7	0	0	0	0	0	0	0	369	1482	2408	3076	3497	3547	3370	2864	2119	1177	188	0	0	0	0	0	0	24094.	24
8	0	0	0	0	0	0	0	71	540	636	947	2611	#2841	#2207	%1988	1239	% 328	% 33	0	0	0	0	0	0	11464.	$22
9	0	0	0	0	0	0	0	34	515	602	817	2013	$3208	%2154	% 336	94	131	26	0	0	0	0	0	0	9929.	24
10	0	0	0	0	0	0	0	10	140	402	347	264	674	721	774	1137	% 85	20	0	0	0	0	0	0	4574.	24
11	0	0	0	0	0	0	0	6	93	171	345	304	336	130	74	99	48	6	0	0	0	0	0	0	1611.	24
12	0	0	0	0	0	0	0	62$	123	272	391	496	400	286	172	172	132	7	0	0	0	0	0	0	2513.	24
13	0	0	0	0	0	0	0	26	257	276	701	386	768	950	789	1145	809	110	0	0	0	0	0	0	8218.	24
14	0	0	0	0	0	0	0	367	1442	2371	3092	3511	3592	3378	2865	2103	1139	156	0	0	0	0	0	0	24015.	24
15	0	0	0	0	0	0	0	359	1394	2321	2570	3388	2746	#2986	#2527	1850	1132	161	0	0	0	0	0	0	22474.	$22
16	0	0	0	0	0	0	0	293	1314	2203	2771	3074	3038	2905	#2492	#2026	1063	126	0	0	0	0	0	0	21788.	$22
17	0	0	0	0	0	0	0	281	1295	2183	2869	3287	3405	3228	2800	2042	1061	128	0	0	0	0	0	0	22578.	24
18	0	0	0	0	0	0	0	284	1340	2232	2913	3104	3428	3249	2745	1884	1030	97	0	0	0	0	0	0	22307.	24
19	0	0	0	0	0	0	0	183	1218	2141	2645	$3149	3245	3079	2809	1869	935	94	0	0	0	0	0	0	21168.	24
20	0	0	0	0	0	0	0	181	1121	2024	2721	3122	3237	3014	2488	1723	1018	103	0	0	0	0	0	0	20751.	24
21	0	0	0	0	0	0	0	69	905	1902	2462	2988	2519	2728	2295	1648	928	33	0	0	0	0	0	0	18474.	24
22	0	0	0	0	0	0	0	67	376	1027	2890	2993	2410	1643	1739	451	436	9	0	0	0	0	0	0	14041.	24
23	0	0	0	0	0	0	0	34	79	311	1308	1012	1353	971	1396	849	156	17	0	0	0	0	0	0	7485.	24
24	0	0	0	0	0	0	0	5	19	114	214	392	305	166	49	206	9	4	0	0	0	0	0	0	1483.	24
25	0	0	0	0	0	0	0	19	105	139	181	210	221	155	68	203	80	4	0	0	0	0	0	0	1384.	24
26	0	0	0	0	0	0	0	220	1266	2192	2762	$3332	3457	3253	2802	2064	1101	104	0	0	0	0	0	0	22553.	24
27	0	0	0	0	0	0	0	226	1262	2149	2821	3294	3449	3261	2776	2037	977	95	0	0	0	0	0	0	22347.	24
28	0	0	0	0	0	0	0	4	86	102	562	612	1616	$2621	%2546	2012	1041	103	0	0	0	0	0	0	11306.	24
29	0	0	0	0	0	0	0	207	1263	1756	2202	$2649	%2928	%2955	2892	2001	555	9	0	0	0	0	0	0	19417.	24
30	0	0	0	0	0	0	0	187	1258	2202	2916	3381	3526	3359	2832	2050	1147	109	0	0	0	0	0	0	22978.	24
AV	0	0	0	0	0	0	0	166	813	1367	1891	$2224	$2362	$2197	$1885	$1408	730	87	0	0	0	0	0	0	15130.$	
HR	30	30	30	30	30	30	30	30	30	30	28	28	28	28	29	30	30	30	30	30	30	30	30	30		712

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-63

ATLANTA (GA TECH) YEAR 1979 MONTH 11

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	1	6	13	19	26	80	33	28	28	19	2	0	0	0	0	0	0	234.	24
2	0	0	0	0	0	0	0	3	13	18	43	48	52	64	40	31	14	1	0	0	0	0	0	0	328.	24
3	0	0	0	0	0	0	0	7	37	71	100	116	123	112	89	58	25	3	0	0	0	0	0	0	743.	24
4	0	0	0	0	0	0	0	6	34	68	95	113	118	108	85	55	25	2	0	0	0	0	0	0	707.	24
5	0	0	0	0	0	0	0	6	33	66	94	113	115	106	80$	54	26	2	0	0	0	0	0	0	697.	24
6	0	0	0	0	0	0	0	3	23	45	74	89	89	83	75	49	21	2	0	0	0	0	0	0	552.	24
7	0	0	0	0	0	0	0	6	32	65	91	107	108	98	77	50	21	2	0	0	0	0	0	0	654.	24
8	0	0	0	0	0	0	0	2	21	35	52	88	96	75	65	41	13	1	0	0	0	0	0	0	490.	24
9	0	0	0	0	0	0	0	1	18	30	44	75	107	80	21	6	7	1	0	0	0	0	0	0	389.	24
10	0	0	0	0	0	0	0	1	8	26	24	20	45	49	38	41	5	1	0	0	0	0	0	0	256.	24
11	0	0	0	0	0	0	0	1	5	11	27	23	27	9	3	5	1	0	0	0	0	0	0	0	112.	24
12	0	0	0	0	0	0	0	3$	6	18	28	35	29	20	12	10	6	0	0	0	0	0	0	0	168.	24
13	0	0	0	0	0	0	0	1	15	17	43	25	48	54	45	40	18	1	0	0	0	0	0	0	307.	24
14	0	0	0	0	0	0	0	4	29	61	89	106	109	98	77	48	18	1	0	0	0	0	0	0	642.	24
15	0	0	0	0	0	0	0	3	26	56	73	101	101	100	80	52	22	3	0	0	0	0	0	0	617.	24
16	0	0	0	0	0	0	0	5	29	58	85	100	103	95	76	49	21	3	0	0	0	0	0	0	624.	24
17	0	0	0	0	0	0	0	6	29	58	82	96	99	92	77	50	22	3	0	0	0	0	0	0	612.	24
18	0	0	0	0	0	0	0	5	29	56	82	91	99	93	74	47	21	3	0	0	0	0	0	0	599.	24
19	0	0	0	0	0	0	0	5	27	54	72$	89	93	86	68	43	18	2	0	0	0	0	0	0	558.	24
20	0	0	0	0	0	0	0	4	25	52	74	88	92	84	69	44	21	3	0	0	0	0	0	0	557.	24
21	0	0	0	0	0	0	0	4	25	52	77	95	87	83	66	42	19	2	0	0	0	0	0	0	552.	24
22	0	0	0	0	0	0	0	4	24	48	91	95	89	70	83	28	18	2	0	0	0	0	0	0	532.	24
23	0	0	0	0	0	0	0	2	7	25	64	60	68	57	57	37	13	2	0	0	0	0	0	0	390.	24
24	0	0	0	0	0	0	0	1	3	13	22	35	30	18	7	19	3	0	0	0	0	0	0	0	152.	24
25	0	0	0	0	0	0	0	2	11	14	19	22	23	18	9	19	8	1	0	0	0	0	0	0	146.	24
26	0	0	0	0	0	0	0	3	25	55	77$	100	104	95	77	49	20	2	0	0	0	0	0	0	607.	24
27	0	0	0	0	0	0	0	3	24	52	76	94	100	93	73	47	19	2	0	0	0	0	0	0	583.	24
28	0	0	0	0	0	0	0	0	8	9	38	44	87	87%	73	47	19	2	0	0	0	0	0	0	414.	24
29	0	0	0	0	0	0	0	3	23	48	88	88	95	93	79	46	15	0	0	0	0	0	0	0	558.	24
30	0	0	0	0	0	0	0	2	22	51	79	98	103	97	75	47	19	1	0	0	0	0	0	0	594.	24
AV	0	0	0	0	0	0	0	3	21	42	63	78	83	75	59	39	17	2	0	0	0	0	0	0	479.	
HR	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		720

FLAGS:
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# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
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OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-64

ATLANTA (GA TECH) YEAR 1979 MONTH 11

AVAILABLE SUNSHINE %

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
3	0	0	0	0	0	0	0	53	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	0	89.	24
4	0	0	0	0	0	0	0	52	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	0	90.	24
5	0	0	0	0	0	0	0	50	100	100	100	100	100	100	100	98%	100	0	0	0	0	0	0	0	89.	24
6	0	0	0	0	0	0	0	0	0	22	63	68	70	74%	97	100	100	0	0	0	0	0	0	0	56.	24
7	0	0	0	0	0	0	0	86	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	0	90.	24
8	0	0	0	0	0	0	0	0	5	2	5	55	76	56	71	49	0	0	0	0	0	0	0	0	30.	24
9	0	0	0	0	0	0	0	0	20	8	8	33	86	51	2	0	0	0	0	0	0	0	0	0	20.	24
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	24	0	0	0	0	0	0	0	0	3.	24
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
13	0	0	0	0	0	0	0	24	0	0	0	0	0	4	1	25	64	0	0	0	0	0	0	0	11.	24
14	0	0	0	0	0	0	0	83	100	100	100	100	100	100	100	99	100	0	0	0	0	0	0	0	92.	24
15	0	0	0	0	0	0	0	84	100	100	100	98	100	100	100	100	100	72	0	0	0	0	0	0	96.	24
16	0	0	0	0	0	0	0	43	100	100	100	100	100	100	100	100	100	55	0	0	0	0	0	0	94.	24
17	0	0	0	0	0	0	0	64	100	100	100	100	100	100	100	100	100	52	0	0	0	0	0	0	95.	24
18	0	0	0	0	0	0	0	72	100	100	100	88	100	100	100	93	100	43	0	0	0	0	0	0	94.	24
19	0	0	0	0	0	0	0	36	100	100	100	100	100	100	100	100	100	40	0	0	0	0	0	0	92.	24
20	0	0	0	0	0	0	0	49	100	100	100	100	100	100	100	100	100	38	0	0	0	0	0	0	94.	24
21	0	0	0	0	0	0	0	0	57	98	92	97	78	82	87	92	87	0	0	0	0	0	0	0	78.	24
22	0	0	0	0	0	0	0	0	0	20	100	98	73	38	52	0	35	0	0	0	0	0	0	0	41.	24
23	0	0	0	0	0	0	0	0	0	0	18	0	25	0	30	22	0	0	0	0	0	0	0	0	9.	24
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
25	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.	24
26	0	0	0	0	0	0	0	77	100	100	100	100	100	100	100	100	100	83	0	0	0	0	0	0	97.	24
27	0	0	0	0	0	0	0	78	100	100	100	100	100	100	100	100	95	48	0	0	0	0	0	0	96.	24
28	0	0	0	0	0	0	0	0	0	0	3	5	57	88	97	100	100	59	0	0	0	0	0	0	48.	24
29	0	0	0	0	0	0	0	73	100	72	65	77	83	88	100	93	30	0	0	0	0	0	0	0	75.	24
30	0	0	0	0	0	0	0	78	100	100	100	100	100	100	100	100	100	65	0	0	0	0	0	0	97.	24
AV	0	0	0	0	0	0	0	30	53	54	58	61	65	63	65	63	60	16	0	0	0	0	0	0	56.	
HR	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		720

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-65

ATLANTA (GA TECH) YEAR 1979 MONTH 12

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	479%	2341	3103	3348	3473	3485	3455	3345	3002	2259	407%	0	0	0	0	0	0	28697.	24
2	0	0	0	0	0	0	0	234%	2197	2942	3272	3393	3427	3401	3252	2897	2119	172	0	0	0	0	0	0	27306.	24
3	0	0	0	0	0	0	0	536%	1605	986	1510$	2035	1678	1849$	2021	2876	2035	135	0	0	0	0	0	0	17265.	24
4	0	0	0	0	0	0	0	331%	2245	3002	3296	3442	3477%	3389%	3242%	2881	2063	304%	0	0	0	0	0	0	27672.	24
5	0	0	0	0	0	0	0	247	1920	2718	3058	3226	3351	3375	2911	1240	406	1	0	0	0	0	0	0	22454.	24
6	0	0	0	0	0	0	0	1	2	3	3	19	3	3	3	3	3	1	0	0	0	0	0	0	42.	24
7	0	0	0	0	0	0	0	266%	2277	3030	3296	3452	3436	3483	3314	3017	2278	431	0	0	0	0	0	0	28280.	24
8	0	0	0	0	0	0	0	288	2235	2990	3299	3429	3489	3431	3282	2976	2253	422%	0	0	0	0	0	0	28094.	24
9	0	0	0	0	0	0	0	242%	2140	2904	3222	3360	3380	3317	3142	2791	1961	268%	0	0	0	0	0	0	26727.	24
10	0	0	0	0	0	0	0	108	1679	2558	2686	2784$	2881	2898	2809	2442	1571	179	0	0	0	0	0	0	22593.	24
11	0	0	0	0	0	0	0	1	3	1136	2216	2750	2780	1561	881	957	659	39	0	0	0	0	0	0	12982.	24
12	0	0	0	0	0	0	0	1	27	452	2293	2701	2809	2046	919	88	28	2	0	0	0	0	0	0	11386.	24
13	0	0	0	0	0	0	0	1	3	3	3	4	3	3	3	3	3	2	0	0	0	0	0	0	32.	24
14	0	0	0	0	0	0	0	1	13	81	584	1208	2058	784	344	533	678	19	0	0	0	0	0	0	6304.	24
15	0	0	0	0	0	0	0	1	730	2497	3028	3079	388	941	3	2	2	1	0	0	0	0	0	0	10673.	24
16	0	0	0	0	0	0	0	5	13	18	761	1017	1464	625	167	21	43	10	0	0	0	0	0	0	4144.	24
17	0	0	0	0	0	0	0	118%	2255	3109	3403*	3593*	3607	3596	3486	3199	2483	549%	0	0	0	0	0	0	30243.$	22
18	0	0	0	0	0	0	0	81%	2030	2735	3117	3340	3345	3134	3136	2811	2104	417%	0	0	0	0	0	0	26229.	24
19	0	0	0	0	0	0	0	55%	2039	2870	3149	3308	3392	3354	3175	2535	2114	359%	0	0	0	0	0	0	26351.	24
20	0	0	0	0	0	0	0	19	1019	299	182	1576	2508	2589	2513	1220	893	17	0	0	0	0	0	0	12837.	24
21	0	0	0	0	0	0	0	1	2	52	219	206	2	2	2	2	2	1	0	0	0	0	0	0	491.	24
22	0	0	0	0	0	0	0	1	2	2	2	2	2	2	3	4	2	1	0	0	0	0	0	0	23.	24
23	0	0	0	0	0	0	0	1	2	2	2	2	2	273	875	192	105	2	0	0	0	0	0	0	1460.	24
24	0	0	0	0	0	0	0	1	2	28	2	2	2	2	2	2	550	258	0	0	0	0	0	0	829.	24
25	0	0	0	0	0	0	0	1	2	2	3	2	61	29	69	2	2	1	0	0	0	0	0	0	176.	24
26	0	0	0	0	0	0	0	8	383	2601	3221	3325	3420	3321	3036	2872	2234	512%	0	0	0	0	0	0	24933.	24
27	0	0	0	0	0	0	0	24	1789	2766	3152	3279	3203	3065	2020	1392	1148	192	0	0	0	0	0	0	22031.	24
28	0	0	0	0	0	0	0	15	876	1192	59	277	431	738	325	100	80	2	0	0	0	0	0	0	4096.	24
29	0	0	0	0	0	0	0	24	32	286	1017	659	871	513	10	3	3	2	0	0	0	0	0	0	3419.	24
30	0	0	0	0	0	0	0	4	14	15	23	19	21	21	21	22	19	12	0	0	0	0	0	0	191.	24
31	0	0	0	0	0	0	0	6	19	2*	2*	18	19	19	19	19	19	12	0	0	0	0	0	0	195.$	22
AV	0	0	0	0	0	0	0	99	964	1478$	1725$	1848$	1903	1781	1559	1294	972	153	0	0	0	0	0	0	13775.$	
HR	31	31	31	31	31	31	31	31	31	30	29	30	31	31	31	31	31	31	31	31	31	31	31	31		740

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-66

ATLANTA (GA TECH) YEAR 1979 MONTH 12

DIRECT (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	193W	1115W	1892W	2226	2285	2282	2282	2252	2105	1751	376X	0	0	0	0	0	0	99999.	W21
2	0	0	0	0	0	0	0	118W	1205W	1929	2196	2246	2267	2270	2217	2070	1693	161	0	0	0	0	0	0	18379.	$22
3	0	0	0	0	0	0	0	372X	1151	676	1014$	1349	1109	1248$	1387	2065	1618	128	0	0	0	0	0	0	12118.	24
4	0	0	0	0	0	0	0	188X	1513	2107	2219	2256	2270	2235	2171	2027	1619	289X	0	0	0	0	0	0	18895.	24
5	0	0	0	0	0	0	0	149	1290	1916	2087	2171	2238	2286	2004	888	314	2	0	0	0	0	0	0	15326.	24
6	0	0	0	0	0	0	0	2	4	4	4	16	4	4	4	4	4	2	0	0	0	0	0	0	55.	24
7	0	0	0	0	0	0	0	228X	1821	2192	2298	2352	2366	2312	2207	2091	1763	384X	0	0	0	0	0	0	20013.	24
8	0	0	0	0	0	0	0	262	1724	2101	2233	2269	2300	2287	2231	2111	1774	396X	0	0	0	0	0	0	19688.	24
9	0	0	0	0	0	0	0	161X	1479	2006	2154	2227	2249	2233	2160	2007	1572	260	0	0	0	0	0	0	18508.	24
10	0	0	0	0	0	0	0	81	1274	1835	1925	1981$	2037	2028	1997	1814	1299	178	0	0	0	0	0	0	16449.	24
11	0	0	0	0	0	0	0	2	4	840	1577	1902	1904	1070	614	714	567	40	0	0	0	0	0	0	9233.	24
12	0	0	0	0	0	0	0	2	21	331	1606	1821	1867	1348	617	82	24	3	0	0	0	0	0	0	7702.	24
13	0	0	0	0	0	0	0	2	6	5	5	5	5	5	5	5	5	2	0	0	0	0	0	0	47.	24
14	0	0	0	0	0	0	0	2	11	56	373	822	1377	536	245	422	579	22	0	0	0	0	0	0	4445.	24
15	0	0	0	0	0	0	0	2	566	1773	2057	2085	259	697	4	4	4	2	0	0	0	0	0	0	7434.	24
16	0	0	0	0	0	0	0	1	4	4	480	632	898	370	79	4	14	2	0	0	0	0	0	0	2488.	24
17	0	0	0	0	0	0	0	112X	1803	2222	2339W	2413W	2416	2417	2381	2275	1947	507X	0	0	0	0	0	0	21593.	$22
18	0	0	0	0	0	0	0	56X	1606	1963	2120	2206	2198	2070	2114	1971	1641	388X	0	0	0	0	0	0	18335.	24
19	0	0	0	0	0	0	0	50X	1590	2011	2118	2171$	2225	2210	2235	1408	1629	334X	0	0	0	0	0	0	17981.	24
20	0	0	0	0	0	0	0	8	81$	154	104	1029	1657	1913	1721	885	703	23	0	0	0	0	0	0	8275.	24
21	0	0	0	0	0	0	0	3	9	44	155	152	8	9	9	9	9	5	0	0	0	0	0	0	414.	24
22	0	0	0	0	0	0	0	3	9	9	9	9	9	9	9	10	9	5	0	0	0	0	0	0	92.	24
23	0	0	0	0	0	0	0	3	9	9	9	9	9	180	591	143	94	5	0	0	0	0	0	0	1062.	24
24	0	0	0	0	0	0	0	3	9	9$	9	9	9	9	9	9	438	230	0	0	0	0	0	0	742.	24
25	0	0	0	0	0	0	0	3	9	9	9	9	45	24	51	9	9	5	0	0	0	0	0	0	179.	24
26	0	0	0	0	0	0	0	4	205	1646	2152	2184	2238	2188	2014	1988	1708	466X	0	0	0	0	0	0	16793.	24
27	0	0	0	0	0	0	0	13	1063X	1851	2076	2127	2075	2001	1346	972	870	185	0	0	0	0	0	0	14580.	24
28	0	0	0	0	0	0	0	18	681	822	40	177	273	470	210	69	67	6	0	0	0	0	0	0	2830.	24
29	0	0	0	0	0	0	0	24	30	205	696	445	591	353	13	8	8	5	0	0	0	0	0	0	2378.	24
30	0	0	0	0	0	0	0	2	8	8	8	8	8	8	8	8	8	5	0	0	0	0	0	0	76.	24
31	0	0	0	0	0	0	0	2	8	8W	8W	8	8	8	8	8	8	5	0	0	0	0	0	0	78.	$22
AV	0	0	0	0	0	0	0	61$	620$	991$	1171$	1231$	1285	1195	1062	909	766	143	0	0	0	0	0	0	9413.$	
HR	31	31	31	31	31	31	31	29	29	29	29	30	31	31	31	31	31	31	31	31	31	31	31	31		735

FLAGS:
X - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
W - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-67

ATLANTA (GA TECH) YEAR 1979 MONTH 12

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	46	526	1161	1697	2013	2120	1998	1671	1089	451	21	0	0	0	0	0	0	12802.	24
2	0	0	0	0	0	0	0	31	505	1134	1684	1998	2105	1994	1847	1083	444	14	0	0	0	0	0	0	12640.	24
3	0	0	0	0	0	0	0	43	526	853	1361$	1869	1857	1597$	1337	1121	421	8	0	0	0	0	0	0	10993.	24
4	0	0	0	0	0	0	0	30	473	1103	1648	1966	2069	1922	1571	1060	426	18	0	0	0	0	0	0	12287.	24
5	0	0	0	0	0	0	0	27	432	1027	1552	1873	2018	1941	1534	796	242	9	0	0	0	0	0	0	11452.	24
6	0	0	0	0	0	0	0	2	66	228	393	748	462	232	104	185	35	3	0	0	0	0	0	0	2457.	24
7	0	0	0	0	0	0	0	30	479	1089	1571	1913	2064	1925	1556	1063	437	21	0	0	0	0	0	0	12150.	24
8	0	0	0	0	0	0	0	22	443	1068	1571	1915	2060	1950	1620	1068	445	23	0	0	0	0	0	0	12186.	24
9	0	0	0	0	0	0	0	20	428	1034	1571	1891	2001	1883	1545	1003	387	12	0	0	0	0	0	0	11773.	24
10	0	0	0	0	0	0	0	18	378	940	1378	1584$	1790	1729	1447	936	353	13	0	0	0	0	0	0	10566.	24
11	0	0	0	0	0	0	0	9	176	767	1466	1811	1861	1454	1046	832	346	11	0	0	0	0	0	0	9777.	24
12	0	0	0	0	0	0	0	10	224	759	1373	1715	1854	1592	1079	485	203	5	0	0	0	0	0	0	9301.	24
13	0	0	0	0	0	0	0	2	80	246	289	498	370	185	224	86	40	2	0	0	0	0	0	0	2024.	24
14	0	0	0	0	0	0	0	4	164	394	1059	1374	1745	1419	993	713	360	19	0	0	0	0	0	0	8246.	24
15	0	0	0	0	0	0	0	9	277	937	1507	1830	1287	1501	672	213	100	2	0	0	0	0	0	0	8336.	24
16	0	0	0	0	0	0	0	1	78	296	1029	1334	1653	1213	931	439	207	6	0	0	0	0	0	0	7187.	24
17	0	0	0	0	0	0	0	8	392	1033	1547%	2052%	2088	2002	1684	1136	487	29	0	0	0	0	0	0	12578.$	22
18	0	0	0	0	0	0	0	6	349	918	1470	1837	1952	1833	1556	1028	427	23	0	0	0	0	0	0	11399.	24
19	0	0	0	0	0	0	0	5	349	949	1488	1839	1977	1891	1570	970	431	22	0	0	0	0	0	0	11492.	24
20	0	0	0	0	0	0	0	6	329	585	737	1430	1737	1749	1535	821	382	19	0	0	0	0	0	0	9329.	24
21	0	0	0	0	0	0	0	2	136	551	939	932	643	614	579	322	68	5	0	0	0	0	0	0	4789.	24
22	0	0	0	0	0	0	0	1	27	154	341	359	514	537	406	310	77	2	0	0	0	0	0	0	2729.	24
23	0	0	0	0	0	0	0	1	54	171	312	404	817	1309	1298	681	191	10	0	0	0	0	0	0	5049.	24
24	0	0	0	0	0	0	0	2	31	76$	120	192	206	253	339	308	340	35	0	0	0	0	0	0	1901.	24
25	0	0	0	0	0	0	0	1	9	25	221	278	590	505	468	70	17	2	0	0	0	0	0	0	2184.	24
26	0	0	0	0	0	0	0	1	211	928	1523	1870	2032	1917	1561	1101	495	38	0	0	0	0	0	0	11675.	24
27	0	0	0	0	0	0	0	2	317	903	1459	1817	1940	1833	1372	869	469	32	0	0	0	0	0	0	11035.	24
28	0	0	0	0	0	0	0	3	294	628	690	949	1229	1388	1064	644	301	25	0	0	0	0	0	0	7216.	24
29	0	0	0	0	0	0	0	1	126	507	1060	1259	1471	969	742	331	222	9	0	0	0	0	0	0	6696.	24
30	0	0	0	0	0	0	0	1	47	126	414	298	354	168	199	50	16	2	0	0	0	0	0	0	1876.	24
31	0	0	0	0	0	0	0	1	11	53%	141%	185	186	177	147	74	17	2	0	0	0	0	0	0	1022.$	22
AV	0	0	0	0	0	0	0	11	256	686$	1101$	1333$	1447	1344	1081	674	286	14	0	0	0	0	0	0	8233.$	
HR	31	31	31	31	31	31	31	31	31	30	29	30	31	31	31	31	31	31	31	31	31	31	31	31		740

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-68

ATLANTA (GA TECH) YEAR 1979 MONTH 12

GLOBAL (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	24	334	730	1049	1235	1290	1208	1007	657	255	6	0	0	0	0	0	0	7793.	24
2	0	0	0	0	0	0	0	16	316	708	1034	1220	1284	1213	1009	664	266	5	0	0	0	0	0	0	7733.	24
3	0	0	0	0	0	0	0	27	340	522	639$	1155	1144	983$	823	701	251	2	0	0	0	0	0	0	8787.	24
4	0	0	0	0	0	0	0	16	307	702	1027	1208	1272#%	1167#	961#	636	236	4	0	0	0	0	0	0	99999.#	21
5	0	0	0	0	0	0	0	11	271	847	957	1145	1222	1163	922	458	109	2	0	0	0	0	0	0	6908.	24
6	0	0	0	0	0	0	0	2	24	105	189	367	224	95	28	73	7	2	0	0	0	0	0	0	1137.	24
7	0	0	0	0	0	0	0	12	297	689	1003	1184	1236	1160	950	619	241	5	0	0	0	0	0	0	7396.	24
8	0	0	0	0	0	0	0	10	277	657	972	1159	1229	1157	961	635	255	8	0	0	0	0	0	0	7321.	24
9	0	0	0	0	0	0	0	9	269	644	961	1143	1203	1131	928	602	218	3	0	0	0	0	0	0	7111.	24
10	0	0	0	0	0	0	0	6	239	607	861	1001$	1122	1070	889	572	202	4	0	0	0	0	0	0	6593.	24
11	0	0	0	0	0	0	0	3	96	468	889	1089	1104	843	592	480	191	4	0	0	0	0	0	0	5760.	24
12	0	0	0	0	0	0	0	3	112	450	819	1000	1074	901	605	248	91	2	0	0	0	0	0	0	5306.	24
13	0	0	0	0	0	0	0	2	25	110	126	236	161	58	84	20	9	2	0	0	0	0	0	0	834.	24
14	0	0	0	0	0	0	0	1	80	211	819	702	1051	838	567	409	204	6	0	0	0	0	0	0	4690.	24
15	0	0	0	0	0	0	0	3	160	586	926	1105	745	883	367	98	41	2	0	0	0	0	0	0	4917.	24
16	0	0	0	0	0	0	0	1	37	149	605	778	979	693	524	227	95	2	0	0	0	0	0	0	4090.	24
17	0	0	0	0	0	0	0	4	266	674	983#%	1272#%	1294	1234	1045	710	303	13	0	0	0	0	0	0	7932.$	22
18	0	0	0	0	0	0	0	3	239	604	936	1139	1201	1117	958	624	253	8	0	0	0	0	0	0	7080.	24
19	0	0	0	0	0	0	0	3	227	603	913	1061$	1208	1142	943#	452#	253	7	0	0	0	0	0	0	6830.$	22
20	0	0	0	0	0	0	0	2	220	356	441	878	1067	1005$	943	491	223	5	0	0	0	0	0	0	5633.	24
21	0	0	0	0	0	0	0	1	72	322	553	541	355	338	319	168	26	2	0	0	0	0	0	0	2699.	24
22	0	0	0	0	0	0	0	1	10	76	178	184	270	280	208	155	28	2	0	0	0	0	0	0	1392.	24
23	0	0	0	0	0	0	0	1	22	83	157	205	329	756	752	383	89	2	0	0	0	0	0	0	2778.	24
24	0	0	0	0	0	0	0	1	5	208	34	63	74	95	156	149	194	15	0	0	0	0	0	0	807.	24
25	0	0	0	0	0	0	0	1	8	25	128	147	348	302	279	45	11	2	0	0	0	0	0	0	1296.	24
26	0	0	0	0	0	0	0	1	150	617	963	1148	1250	1172	951	877	298	17	0	0	0	0	0	0	7243.	24
27	0	0	0	0	0	0	0	1	216	595	923	1121	1194	1113	826	516	297	15	0	0	0	0	0	0	8819.	24
28	0	0	0	0	0	0	0	3	206	392	404	560	720	819	622	371	171	10	0	0	0	0	0	0	4276.	24
29	0	0	0	0	0	0	0	1	81	309	651	749	878	562	415	173	114	3	0	0	0	0	0	0	3936.	24
30	0	0	0	0	0	0	0	1	18	51	218	148	184	78	94	14	5	2	0	0	0	0	0	0	810.	24
31	0	0	0	0	0	0	0	1	7	27#	71#	92	91	87	72	31	6	2	0	0	0	0	0	0	501.$	22
AV	0	0	0	0	0	0	0	6	159	424$	689$	793$	851$	783$	617$	387$	159	5	0	0	0	0	0	0	4853.$	
HR	31	31	31	31	31	31	31	31	31	30	29	30	30	30	29	30	31	31	31	31	31	31	31	31		735

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-69

ATLANTA (GA TECH) YEAR 1979 MONTH 12

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	15	77	125	160	178	194	183	164	138	80	10	0	0	0	0	0	0	1324.	24
2	0	0	0	0	0	0	0	15	100	157	183	207	219	213	189	157	97	10	0	0	0	0	0	0	1548.	24
3	0	0	0	0	0	0	0	17	258	524	661$	797	942	711$	481	220	88	8	0	0	0	0	0	0	4706.	24
4	0	0	0	0	0	0	0	13	82	134	168	186	204#	189#	168#	143	91	12	0	0	0	0	0	0	99999.#	21
5	0	0	0	0	0	0	0	18	111	166	192	213	213	206	242	414	180	16	0	0	0	0	0	0	1974.	24
6	0	0	0	0	0	0	0	8	88	251	412	750	487	261	136	216	68	13	0	0	0	0	0	0	2690.	24
7	0	0	0	0	0	0	0	18	96	139	159	165	165	158	148	120	78	11	0	0	0	0	0	0	1255.	24
8	0	0	0	0	0	0	0	14	89	136	158	173	183	181	169	136	85	12	0	0	0	0	0	0	1337.	24
9	0	0	0	0	0	0	0	13	91	143	168	185	192	186	167	137	77	8	0	0	0	0	0	0	1367.	24
10	0	0	0	0	0	0	0	14	106	162	220	245$	271	252	225	187	114	16	0	0	0	0	0	0	1812.	24
11	0	0	0	0	0	0	0	15	187	395	512	435	400	671	674	548	278	21	0	0	0	0	0	0	4137.	24
12	0	0	0	0	0	0	0	20	241	640	409	370	380	553	693	482	234	18	0	0	0	0	0	0	4040.	24
13	0	0	0	0	0	0	0	8	108	275	317	524	399	217	254	118	77	9	0	0	0	0	0	0	2304.	24
14	0	0	0	0	0	0	0	9	170	379	798	581	663	1011	828	561	245	28	0	0	0	0	0	0	5273.	24
15	0	0	0	0	0	0	0	13	165	195	228	290	1081	948	679	233	120	7	0	0	0	0	0	0	3940.	24
16	0	0	0	0	0	0	0	5	90	303	720	831	908	909	880	458	223	14	0	0	0	0	0	0	5342.	24
17	0	0	0	0	0	0	0	7	71	123	149#	183#	182	171	151	123	72	9	0	0	0	0	0	0	1233.$	22
18	0	0	0	0	0	0	0	5	57	123	167	186	207	278	217	154	86	11	0	0	0	0	0	0	1493.	24
19	0	0	0	0	0	0	0	6	69	128	173	202	223	265	265	146%	103	17	0	0	0	0	0	0	1598.	24
20	0	0	0	0	0	0	0	10	185	508	669	755%	673#	862#	646#	506%	252	35	0	0	0	0	0	0	99999.#	21
21	0	0	0	0	0	0	0	7	158	543	854	851	655	629	596	344	94	15	0	0	0	0	0	0	4746.	24
22	0	0	0	0	0	0	0	6	52	181	364	363	533	558	430	335	107	8	0	0	0	0	0	0	2959.	24
23	0	0	0	0	0	0	0	4	76	195	333	425	639	1233%	945$	856	204	22	0	0	0	0	0	0	4735.	24
24	0	0	0	0	0	0	0	7	63	110$	156	216	230	277	359	326	293	34	0	0	0	0	0	0	2070.	24
25	0	0	0	0	0	0	0	4	35	95%	283	319	615	550	501	137	51	8	0	0	0	0	0	0	2596.	24
26	0	0	0	0	0	0	0	6	191	215%	203	233	241	250	250	195	116	23	0	0	0	0	0	0	1924.	24
27	0	0	0	0	0	0	0	7	92	150	183	223	288	347	543	468	297	45	0	0	0	0	0	0	2643.	24
28	0	0	0	0	0	0	0	8	185	317	687	833	1052	1089%	969	636	318	42	0	0	0	0	0	0	6138.	24
29	0	0	0	0	0	0	0	4	147	451	670	957	1090%	798%	764	367	258	23	0	0	0	0	0	0	5528.	24
30	0	0	0	0	0	0	0	4	68	150	435	322	377	193	216	71	34	9	0	0	0	0	0	0	1879.	24
31	0	0	0	0	0	0	0	4	24	76#	162#	204	206	196	167	95	36	9	0	0	0	0	0	0	1190.$	22
AV	0	0	0	0	0	0	0	10	114	247$	367$	408$	456$	465$	424$	285	144	17	0	0	0	0	0	0	2937.$	
HR	31	31	31	31	31	31	31	31	31	30	29	30	29	29	29	31	31	31	31	31	31	31	31	31		734

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-70

ATLANTA (GA TECH) YEAR 1979 MONTH 12

LAT. TILTED KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	204	1293	2238	2937	3382	3517	3335	2885	2115	1142	114	0	0	0	0	0	0	23160.	24
2	0	0	0	0	0	0	0	113	1217	2169	2910	3358	3495	3345	2856	2088	1109	68	0	0	0	0	0	0	22726.	24
3	0	0	0	0	0	0	0	193	1067	1315	2051$	2787	2725	2501$	2277	2144	1074	50	0	0	0	0	0	0	18185.	24
4	0	0	0	0	0	0	0	139	1193	2152	2877	3336	3470	3285	2815	2052	1071	92	0	0	0	0	0	0	22480.	24
5	0	0	0	0	0	0	0	107	1062	2013	2725	3170	3379	3270	2675	1360	417	9	0	0	0	0	0	0	20187.	24
6	0	0	0	0	0	0	0	3	62	200	330	734	418	206	96	163	34	5	0	0	0	0	0	0	2251.	24
7	0	0	0	0	0	0	0	109	1134	2114	2841	3293	3463	3278	2816	2085	1119	114	0	0	0	0	0	0	22366.	24
8	0	0	0	0	0	0	0	104	1113	1997	2826	3286	3465	3297	2838	2105	1152	121	0	0	0	0	0	0	22305.	24
9	0	0	0	0	0	0	0	89	1109	2061	2786	3228	3369	3189	2729	1989	1025	85	0	0	0	0	0	0	21658.	24
10	0	0	0	0	0	0	0	55	945	1894	2468	2743$	3019	2944	2547	1833	893	87	0	0	0	0	0	0	19408.	24
11	0	0	0	0	0	0	0	10	163	1285	2416	3007	3113	2227	1520%	1263	811	27	0	0	0	0	0	0	15626.	24
12	0	0	0	0	0	0	0	15	261	1070	2408	2916	3122	2338$	1553	542	235	9	0	0	0	0	0	0	14466.	24
13	0	0	0	0	0	0	0	3	78	232	270	450	334	161	196	79	38	4	0	0	0	0	0	0	1845.	24
14	0	0	0	0	0	0	0	5	177	425	1197$	1969%	2839	1954%	1250	1003	659	32	0	0	0	0	0	0	11509.	24
15	0	0	0	0	0	0	0	14	581	1874	2703	3163	1672%	1177$	683	185	85	3	0	0	0	0	0	0	12139.	24
16	0	0	0	0	0	0	0	3	74	801	1136$	1972%	1787$	1602%	1053	405	224	7	0	0	0	0	0	0	8584.	24
17	0	0	0	0	0	0	0	33	1102	2118	2802N	3498N	3549	3417	2981	2261	1279	156	0	0	0	0	0	0	23671.	$22
18	0	0	0	0	0	0	0	24	1002	1907	2670	8174	3330	3134	2771	2045	1125	127	0	0	0	0	0	0	21310.	24
19	0	0	0	0	0	0	0	23	1007	1962	2683	3168	3373	3230	2780	1635	1129	119	0	0	0	0	0	0	21109.	24
20	0	0	0	0	0	0	0	17	782	773	871	2222	2933	2950	2586	1365	744	33	0	0	0	0	0	0	15276.	24
21	0	0	0	0	0	0	0	3	130	640%	1187%	1027%	559	535	514	292	65	7	0	0	0	0	0	0	4958.	24
22	0	0	0	0	0	0	0	2	27	141	304	332	472	468	365	292	74	4	0	0	0	0	0	0	2481.	24
23	0	0	0	0	0	0	0	2	55	156	277	355	530	1455	1969%	828%	265	13	0	0	0	0	0	0	5905.	24
24	0	0	0	0	0	0	0	3	28	65$	102	167	168	229	311	275	507	104	0	0	0	0	0	0	1959$	24
25	0	0	0	0	0	0	0	2	16	59	232	274	673	531	513	95	28	4	0	0	0	0	0	0	2429.	24
26	0	0	0	0	0	0	0	2	437	1937	2761	3225	3469	3275	2758	2161	1230	170	0	0	0	0	0	0	21428.	24
27	0	0	0	0	0	0	0	8	909	1906	2668	3151	3302	3127	2275	1515	942	67	0	0	0	0	0	0	19887.	24
28	0	0	0	0	0	0	0	9	641	1147	727	1154	1503	1853	1296	722	358	36	0	0	0	0	0	0	9446.	24
29	0	0	0	0	0	0	0	2	150	676	1854%	1708%	2048%	1318	741	304	210	10	0	0	0	0	0	0	8822.	24
30	0	0	0	0	0	0	0	2	40	106	369	252	307	146	173	44	17	4	0	0	0	0	0	0	1459.	24
31	0	0	0	0	0	0	0	2	13	50N	124N	181	162	149	130	88	16	4	0	0	0	0	0	0	907.	$22
AV	0	0	0	0	0	0	0	42	576	1230$	1772$	2105$	2244	2062	1708	1139	609	54	0	0	0	0	0	0	13543.$	
HR	31	31	31	31	31	31	31	31	31	30	29	30	31	31	31	31	31	31	31	31	31	31	31	31		740

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
N - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-71

ATLANTA (GA TECH) YEAR 1979 MONTH 12

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	2	23	53	79	97	102	94	75	47	19	2	0	0	0	0	0	0	593.	24
2	0	0	0	0	0	0	0	2	22	52	80	98	104	96	75	47	19	1	0	0	0	0	0	0	595.	24
3	0	0	0	0	0	0	0	2	21	43	67$	91	92	78$	64	46	18	1	0	0	0	0	0	0	524.	24
4	0	0	0	0	0	0	0	2	20	48	74	93	98N	90N	70N	44	18	2	0	0	0	0	0	0	99999.N	21
5	0	0	0	0	0	0	0	2	19	45	69	85	92	87	66	38	15	1	0	0	0	0	0	0	519.	24
6	0	0	0	0	0	0	0	1	6	19	30	50	34	20	10	15	5	1	0	0	0	0	0	0	190.	24
7	0	0	0	0	0	0	0	2	20	49	73	91	99	92	74	47	19	2	0	0	0	0	0	0	568.	24
8	0	0	0	0	0	0	0	2	20	49	76	95	102	94	75	48	20	2	0	0	0	0	0	0	582.	24
9	0	0	0	0	0	0	0	1	20	48	75	93	98	90	71	45	18	2	0	0	0	0	0	0	561.	24
10	0	0	0	0	0	0	0	1	17	42	58	65$	73	71	58	38	16	2	0	0	0	0	0	0	441.	24
11	0	0	0	0	0	0	0	1	12	39	88	84	88	71	53	37	16	2	0	0	0	0	0	0	473.	24
12	0	0	0	0	0	0	0	2	15	38	67	83	90	80	55	30	14	2	0	0	0	0	0	0	476.	24
13	0	0	0	0	0	0	0	0	7	18	22	36	28	17	19	9	5	0	0	0	0	0	0	0	161.	24
14	0	0	0	0	0	0	0	1	13	28	60	74$	87	71	52	36	17	2	0	0	0	0	0	0	439.	24
15	0	0	0	0	0	0	0	1	16	43	70	89	72	78	43	18	8	0	0	0	0	0	0	0	434.	24
16	0	0	0	0	0	0	0	0	9	25	59	74	87	66	52	28	15	2	0	0	0	0	0	0	419.	24
17	0	0	0	0	0	0	0	1	16	44	69N	97N	99	93	75	48	19	1	0	0	0	0	0	0	564.	$22
18	0	0	0	0	0	0	0	0	14	39	65	86	93	85	69	44	18	2	0	0	0	0	0	0	516.	24
19	0	0	0	0	0	0	0	1	15	42	68	86	94	88	70	36	18	2	0	0	0	0	0	0	519.	24
20	0	0	0	0	0	0	0	1	14	31	41	69	82	79	65	38	17	2	0	0	0	0	0	0	438.	24
21	0	0	0	0	0	0	0	0	10	32	52	54	42	40	36	23	6	1	0	0	0	0	0	0	295.	24
22	0	0	0	0	0	0	0	0	3	12	24	27	36	37	28	22	8	0	0	0	0	0	0	0	199.	24
23	0	0	0	0	0	0	0	0	5	13	22	30	42	68	67	35	15	2	0	0	0	0	0	0	299.	24
24	0	0	0	0	0	0	0	0	5	8$	12	16	18	21	24	21	17	2	0	0	0	0	0	0	146.	24
25	0	0	0	0	0	0	0	0	2	6	19	23	39	36	35	10	3	0	0	0	0	0	0	0	174.	24
26	0	0	0	0	0	0	0	0	14	43	71	88	99	92	73	49	22	2	0	0	0	0	0	0	554.	24
27	0	0	0	0	0	0	0	1	15	42	69	87	94	87	68	44	21	2	0	0	0	0	0	0	528.	24
28	0	0	0	0	0	0	0	0	13	35	41	52	67	73	55	35	16	3	0	0	0	0	0	0	389.	24
29	0	0	0	0	0	0	0	0	8	30	56	67	75	56	44	23	15	2	0	0	0	0	0	0	378.	24
30	0	0	0	0	0	0	0	0	4	9	29	23	27	15	10	6	3	1	0	0	0	0	0	0	133.	24
31	0	0	0	0	0	0	0	0	2	6N	12N	15	15	15	12	7	3	1	0	0	0	0	0	0	88.	$22
AV	0	0	0	0	0	0	0	1	13	34$	55$	67$	72$	66$	52$	33	14	1	0	0	0	0	0	0	410.	$
HR	31	31	31	31	31	31	31	31	31	30	29	30	30	30	30	31	31	31	31	31	31	31	31	31		737

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
N - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-72

ATLANTA (GA TECH) YEAR 1979 MONTH 12

AVAILABLE SUNSHINE %

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	0	0	85	100	100	100	100	100	100	100	100	100	89	0	0	0	0	0	0	97.	24
2	0	0	0	0	0	0	0	30	100	100	100	100	100	100	100	100	100	15	0	0	0	0	0	0	93.	24
3	0	0	0	0	0	0	0	76	80	62	90	97	90	90	97	100	100	0	0	0	0	0	0	0	85.	24
4	0	0	0	0	0	0	0	46	100	100	100	100	60	82	83	100	100	0	0	0	0	0	0	0	86.	24
5	0	0	0	0	0	0	0	43	100	100	100	100	100	100	100	85	23	0	0	0	0	0	0	0	84.	24
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
7	0	0	0	0	0	0	0	22	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	0	92.	24
8	0	0	0	0	0	0	0	0	100	100	100	99	100	100	100	100	100	0	0	0	0	0	0	0	91.	24
9	0	0	0	0	0	0	0	0	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	0	91.	24
10	0	0	0	0	0	0	0	25	100	100	100	100	100	95	100	100	100	0	0	0	0	0	0	0	91.	24
11	0	0	0	0	0	0	0	0	0	54	96	100	99	81	38	49	50	0	0	0	0	0	0	0	56.	24
12	0	0	0	0	0	0	0	0	0	30	100	100	100	78	50	0	0	0	0	0	0	0	0	0	47.	24
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
14	0	0	0	0	0	0	0	0	0	5	29	63	100	45	17	35	44	0	0	0	0	0	0	0	35.	24
15	0	0	0	0	0	0	0	0	40	97	100	100	15	47	0	0	0	0	0	0	0	0	0	0	41.	24
16	0	0	0	0	0	0	0	0	0	0	38	39	59	20	5	0	0	0	0	0	0	0	0	0	16.	24
17	0	0	0	0	0	0	0	32	100	99	100	100	100	100	100	100	100	0	0	0	0	0	0	0	92.	24
18	0	0	0	0	0	0	0	95	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	0	95.	24
19	0	0	0	0	0	0	0	33	100	100	100	99	100	100	100	88	100	0	0	0	0	0	0	0	90.	24
20	0	0	0	0	0	0	0	67	72	9	4	80	100	99	100	72	58	0	0	0	0	0	0	0	63.	24
21	0	0	0	0	0	0	0	0	0	1	9	9	0	0	0	0	0	0	0	0	0	0	0	0	2.	24
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
23	0	0	0	0	0	0	0	0	0	0	0	0	0	17	43	10	6	0	0	0	0	0	0	0	8.	24
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0	0	0	0	0	0	0	4.	24
25	0	0	0	0	0	0	0	0	0	0	0	0	3	1	3	0	0	0	0	0	0	0	0	0	1.	24
26	0	0	0	0	0	0	0	0	18	96	100	100	100	100	100	100	100	0	0	0	0	0	0	0	84.	24
27	0	0	0	0	0	0	0	0	98	99	100	100	100	100	100	91	71	0	0	0	0	0	0	0	88.	24
28	0	0	0	0	0	0	0	0	56	75	0	24	36	41	1	0	0	0	0	0	0	0	0	0	24.	24
29	0	0	0	0	0	0	0	0	0	18	52	36	53	39	0	0	0	0	0	0	0	0	0	0	20.	24
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
AV	0	0	0	0	0	0	0	20	47	54	58	61	62	58	53	49	48	3	0	0	0	0	0	0	51.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

GT 3% ERROR IN MONTHLY AVG:
DAILY AVG = 47.

TABLE A-73

ATLANTA (GA TECH) YEAR 1980 MONTH 1

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	1	2	2	2	2	2	12	168	209	257	72	0	0	0	0	0	0	731.	24
2	0	0	0	0	0	0	0	40	1555	2620	3090	3259	3289	3206	2981	2789	1505	244	0	0	0	0	0	0	24577.	24
3	0	0	0	0	0	0	0	3	881	1834	2877	3032	3171	3161	3081	2770	1945	244	0	0	0	0	0	0	22998.	24
4	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	21.	24
5	0	0	0	0	0	0	0	1	2	160	248	5	6	75	8	6	3	2	0	0	0	0	0	0	516.	24
6	0	0	0	0	0	0	0	104	1708	2743	3127	3281	3347	3339	3218	2938	2309	668	0	0	0	0	0	0	26781.	24
7	0	0	0	0	0	0	0	1	12	78	2	2	2	2	2	2	2	2	0	0	0	0	0	0	37.	24
8	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	23.	24
9	0	0	0	0	0	0	0	1	2	2	2	2	2	16	12	168	3	2	0	0	0	0	0	0	213.	24
10	0	0	0	0	0	0	0	1	2	2	2	4	74	4	5	2	2	2	0	0	0	0	0	0	101.	24
11	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	23.	24
12	0	0	0	0	0	0	0	3	9	2	2	2	2	2	3	4	2	2	0	0	0	0	0	0	34.	24
13	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	23.	24
14	0	0	0	0	0	0	0	1	2	28	2	62	388	2	2	2	2	2	0	0	0	0	0	0	468.	24
15	0	0	0	0	0	0	0	1	2	40	1968	1945	1908	1280	119	4	3	4	0	0	0	0	0	0	7272.	24
16	0	0	0	0	0	0	0	2	720	1889	2735	3145	2752	1021	1370	463	3	3	0	0	0	0	0	0	14104.	24
17	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	23.	24
18	0	0	0	0	0	0	0	1	2	13	345	589	%2902	%2047	2763	2804	2541	1121	0	0	0	0	0	0	15129.	24
19	0	0	0	0	0	0	0	75	%1973	%2860	%3112	%3368	%3416	3387	3238	2951	2472	947	0	0	0	0	0	0	27777.	24
20	0	0	0	0	0	0	0	53	%1733	2663	3030	2717	2548	87	894	119	2	2	0	0	0	0	0	0	13849.	24
21	0	0	0	0	0	0	0	1	6	27	258	2	99	2	5	2	2	2	0	0	0	0	0	0	408.	24
22	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	22.	24
23	0	0	0	0	0	0	0	1	2	2	2	322	2608	3448	3391	3248	2769	1411	0	0	0	0	0	0	17202.	24
24	0	0	0	0	0	0	0	85	%2083	%2905	%3244	3395	3448	3463	3365	3147	2527	968	0	0	0	0	0	0	28610.	24
25	0	0	0	0	0	0	0	16	83	9	9	70	40	67	8	110	2	2	0	0	0	0	0	0	397.	24
26	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	20.	24
27	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	20.	24
28	0	0	0	0	0	0	0	5	700	1660	2192	2724	2949	2145	2737	2402	2001	679	0	0	0	0	0	0	20194.	24
29	0	0	0	0	0	0	0	7	16	2	2	11	7	2	592	259	71	5	0	0	0	0	0	0	975.	24
30	0	0	0	0	0	0	0	3	2	2	2	2	2	2	2	2	70	2	0	0	0	0	0	0	92.	24
31	0	0	0	0	0	0	0	1	19	262	27	2	154	82	1261	2015	1538	146	0	0	0	0	0	0	5507.	24
AV	0	0	0	0	0	0	0	13	371	636	848	902	1069	866	943	853	647	211	0	0	0	0	0	0	7360.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
9 - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-74

ATLANTA (GA TECH) YEAR 1980 MONTH 1

DIRECT (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	2	8	8	7	7	7	13	124	183	219	71	0	0	0	0	0	0	831.	24
2	0	0	0	0	0	0	0	33	1234	1848	2049	2113	2117	2054	1941	1884	1101	216	0	0	0	0	0	0	18590.	24
3	0	0	0	0	0	0	0	2	435%	1058%	1852	2004	2044	2040	2012	1880	1455	213	0	0	0	0	0	0	14995.	24
4	0	0	0	0	0	0	0	2	7	7	7	7	7	7	7	7	7	5	0	0	0	0	0	0	72.	24
5	0	0	0	0	0	0	0	2	7	91	174	9	10	52	10	9	8	5	0	0	0	0	0	0	377.	24
6	0	0	0	0	0	0	0	13#	495#	1227#	1863	2127	2167	2154	2106	1988	1704	579	0	0	0	0	0	0	99999.#	21
7	0	0	0	0	0	0	0	2	8	88	7	7	7	7	7	7	7	5	0	0	0	0	0	0	72.	24
8	0	0	0	0	0	0	0	2	7	7	7	7	7	7	7	7	7	5	0	0	0	0	0	0	71.	24
9	0	0	0	0	0	0	0	2	7	7	7	7	7	11	12	120	7	5	0	0	0	0	0	0	193.	24
10	0	0	0	0	0	0	0	2	7	7	7	7	45	8	9	7	7	5	0	0	0	0	0	0	110.	24
11	0	0	0	0	0	0	0	2	7	7	7	7	7	7	7	7	7	5	0	0	0	0	0	0	88.	24
12	0	0	0	0	0	0	0	2	7	7	7	7	7	7	7	7	7	5	0	0	0	0	0	0	89.	24
13	0	0	0	0	0	0	0	2	7	7	7	7	7	7	7	7	7	6	0	0	0	0	0	0	88.	24
14	0	0	0	0	0	0	0	2	7	7$	7	121$	236	7	7	7	7	8	0	0	0	0	0	0	412.	24
15	0	0	0	0	0	0	0	2	7	28	1275	1199	1159	792	75	8	7	8	0	0	0	0	0	0	4560.	24
16	0	0	0	0	0	0	0	3	530	1250	1732	1941	1682	810	831	299	7	7	0	0	0	0	0	0	8892.	24
17	0	0	0	0	0	0	0	2	7	7	7	7	6	7	7	7	7	6	0	0	0	0	0	0	67.	24
18	0	0	0	0	0	0	0	2	8	11	195	370%	1809%	1277	1739	1829	1759	911	0	0	0	0	0	0	9908.	24
19	0	0	0	0	0	0	0	14%	1113%	1830	1944	2086%	2194	2183	2135	2013	1617	820	0	0	0	0	0	0	18149.	24
20	0	0	0	0	0	0	0	51%	1364	1851	2010	1757	1820	50	549	76	7	6	0	0	0	0	0	0	9343.	24
21	0	0	0	0	0	0	0	3	10	20	162	6	61	6	8	7	6	6	0	0	0	0	0	0	295.	24
22	0	0	0	0	0	0	0	2	6	6	6	6	6	6	6	6	6	6	0	0	0	0	0	0	64.	24
23	0	0	0	0	0	0	0	2	6	6	8	217	1744	2280	2258	2207	2005	1193	0	0	0	0	0	0	11925.	24
24	0	0	0	0	0	0	0	78%	1593	1993	2115	2168	2180	2195	2156	2073	1772	805	0	0	0	0	0	0	19127.	24
25	0	0	0	0	0	0	0	17	54	9	9	42	26	42	10	73	6	6	0	0	0	0	0	0	294.	24
26	0	0	0	0	0	0	0	2	6	6	6	6	8	6	6	6	6	6	0	0	0	0	0	0	83.	24
27	0	0	0	0	0	0	0	2	6	6	6	6	6	6	6	6	6	6	0	0	0	0	0	0	63.	24
28	0	0	0	0	0	0	0	5	458	992	1426$	1861	1994	1451	1880	1717	1565	616	0	0	0	0	0	0	13967.	24
29	0	0	0	0	0	0	0	8	19	6	6	11	9	6	411	180	57	9	0	0	0	0	0	0	722.	24
30	0	0	0	0	0	0	0	4	8	6	6	6	6	6	6	6	57	6	0	0	0	0	0	0	116.	24
31	0	0	0	0	0	0	0	3	16	167	20	6	102	59	891	1469	1215	135	1	0	0	0	0	0	4083.	24
AV	0	0	0	0	0	0	0	9$	232$	375$	546	585	887	560	620	583	479	183	0	0	0	0	0	0	4860.$	
HR	31	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31		741

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

GT 3% ERROR IN MONTHLY AVG:
DAILY AVG = 4512.

TABLE A-75

ATLANTA (GA TECH) YEAR 1980 MONTH 1

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	1	9	83	153	317	257	526	470	495	347	35	0	0	0	0	0	0	2693.	24
2	0	0	0	0	0	0	0	2	294	899	1471	1824	1992	1895	1573	1134	444	46	0	0	0	0	0	0	11572.	24
3	0	0	0	0	0	0	0	1	289	831	1458	1724	1909	1857	1568	1106	495	39	0	0	0	0	0	0	11278.	24
4	0	0	0	0	0	0	0	1	3	24	65	115	113	127	157	115	30	3	0	0	0	0	0	0	754.	24
5	0	0	0	0	0	0	0	1	27	477	699	591	774	809	467	403	141	31	0	0	0	0	0	0	4420.	24
6	0	0	0	0	0	0	0	2	292	902	1466	1860	2030	1981	1688	1196	574	87	0	0	0	0	0	0	12058.	24
7	0	0	0	0	0	0	0	2	75	206$	337	306	413	360	130	138	56	3	0	0	0	0	0	0	2026.	24
8	0	0	0	0	0	0	0	1	42	133	159	238	226	127	161	87	15	3	0	0	0	0	0	0	1191.	24
9	0	0	0	0	0	0	0	1	3	69	258	320	569	903	609	837	184	18	0	0	0	0	0	0	3573.	24
10	0	0	0	0	0	0	0	1	105	374	677	864	854	829	688	358	161	10	0	0	0	0	0	0	4902.	24
11	0	0	0	0	0	0	0	1	5	59	59	104	93	153	200	235	131	5	0	0	0	0	0	0	1044.	24
12	0	0	0	0	0	0	0	3	136	264	371	597	733	480	520	480	268	40	0	0	0	0	0	0	3891.	24
13	0	0	0	0	0	0	0	1	31	64	111	193	201	393	450	418	87	13	0	0	0	0	0	0	1963.	24
14	0	0	0	0	0	0	0	1	73	356$	639	976	1278	817	484	337	172	25	0	0	0	0	0	0	4938.	24
15	0	0	0	0	0	0	0	2	136	447	1348	1677	2023	1723	1061	538	184	15	0	0	0	0	0	0	9152.	24
16	0	0	0	0	0	0	0	3	307	889	1478	1896	2070	1682	1513	894	284	27	0	0	0	0	0	0	11044.	24
17	0	0	0	0	0	0	0	1	3	54	82	96	54	81	99	94	49	6	0	0	0	0	0	0	619.	24
18	0	0	0	0	0	0	0	1	30	310	693	907%2	283%1	742	1821	1246	697	123	0	0	0	0	0	0	9856.	24
19	0	0	0	0	0	0	0	4	310%	900	1449	2042%2	120	2061	1792	1285	675	106	0	0	0	0	0	0	12744.	24
20	0	0	0	0	0	0	0	4	309	920	1497	1937	2139	1313	1583	787	289	53	0	0	0	0	0	0	10832.	24
21	0	0	0	0	0	0	0	8	137	378	991	822	1013	324	375	301	108	3	0	0	0	0	0	0	4460.	24
22	0	0	0	0	0	0	0	1	28	62	215	294	376	161	182	148	33	3	0	0	0	0	0	0	1484.	24
23	0	0	0	0	0	0	0	1	39	256	308	980	2048	2234	1961	1477	613	167	0	0	0	0	0	0	10284.	24
24	0	0	0	0	0	0	0	1	354	1014	1536%1	983	2192	2153	1898	1420	762	125	0	0	0	0	0	0	13440.	24
25	0	0	0	0	0	0	0	3	152	440	582	1008	1117	985	653	757	308	49	0	0	0	0	0	0	6051.	24
26	0	0	0	0	0	0	0	1	30	123	246	473	249	232	266	200	78	13	0	0	0	0	0	0	1909.	24
27	0	0	0	0	0	0	0	1	28	120	159	242	233	183	285	133	61	43	0	0	0	0	0	0	1488.	24
28	0	0	0	0	0	0	0	6	293	902	1427$1	952	2293	1946	1975	1440	827	170	0	0	0	0	0	0	13231.	24
29	0	0	0	0	0	0	0	1	60	260	312	750	958	748	1131	786	470	92	0	0	0	0	0	0	5570.	24
30	0	0	0	0	0	0	0	9	28	152	372	418	389	443	672	294	293	36	0	0	0	0	0	0	3107.	24
31	0	0	0	0	0	0	0	1	97	584	508	630	1288	1053	1703	1483	801	139	0	0	0	0	0	0	8287.	24
AV	0	0	0	0	0	0	0	2	120	405	681	907	1108	972	908	659	317	49	0	0	0	0	0	0	6125.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-76

ATLANTA (GA TECH) YEAR 1980 MONTH 1

GLOBAL (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	1	4	32	70	163	129	290	261	290	204	16	0	0	0	0	0	0	1462.	24
2	0	0	0	0	0	0	0	1	192	586	935	1139	1225	1168	978	888	260	22	0	0	0	0	0	0	7195.	24
3	0	0	0	0	0	0	0	1	189	545	933	1101	1189	1159	987	681	301	18	0	0	0	0	0	0	7104.	24
4	0	0	0	0	0	0	0	1	4	3	17	40	33	37	60	45	7	3	0	0	0	0	0	0	249.	24
5	0	0	0	0	0	0	0	1	17	294	422	336	444	468	259	227	72	14	0	0	0	0	0	0	2553.	24
6	0	0	0	0	0	0	0	2	205	607	951	1171	1289	1228	1049	743	357	36	0	0	0	0	0	0	7618.	24
7	0	0	0	0	0	0	0	2	46	117$	189	161	214	175	48	53	19	3	0	0	0	0	0	0	1025.	24
8	0	0	0	0	0	0	0	1	16	54	67	107	91	37	56	21	4	3	0	0	0	0	0	0	457.	24
9	0	0	0	0	0	0	0	1	3	20	123	161	309	518	341	364	94	6	0	0	0	0	0	0	1937.	24
10	0	0	0	0	0	0	0	1	54	204	374	483	482	462	370	192	82	5	0	0	0	0	0	0	2710.	24
11	0	0	0	0	0	0	0	1	5	34	10	19	13	41	73	98	51	3	0	0	0	0	0	0	348.	24
12	0	0	0	0	0	0	0	1	78	146	207	336	416	280	286	270	144	16	0	0	0	0	0	0	2160.	24
13	0	0	0	0	0	0	0	1	11	20	44	84	87	192	227	217	30	5	0	0	0	0	0	0	918.	24
14	0	0	0	0	0	0	0	1	33	197$	361	559	738	328	240	171	78	7	0	0	0	0	0	0	2710.	24
15	0	0	0	0	0	0	0	1	70	239	829	1018	1224	1035	617	293	82	4	0	0	0	0	0	0	5412.	24
16	0	0	0	0	0	0	0	1	190	554	899	1136	1230	975	871	499	128	7	0	0	0	0	0	0	8491.	24
17	0	0	0	0	0	0	0	1	3	9	6	7	3	6	11	13	5	3	0	0	0	0	0	0	69.	24
18	0	0	0	0	0	0	0	1	5	135	357	225#	1222#	1063	1086	737	405	58	0	0	0	0	0	0	5722.	$22
19	0	0	0	0	0	0	0	3	105#	825#	925	1168%	1280	1236	1071	787	394	49	0	0	0	0	0	0	7525.	$22
20	0	0	0	0	0	0	0	2	202	588	937	1185	1267	747	926	434	130	13	0	0	0	0	0	0	6451.	24
21	0	0	0	0	0	0	0	4	73	208	583	456	570	156	185	145	39	3	0	0	0	0	0	0	2421.	24
22	0	0	0	0	0	0	0	1	8	10	82	121	183	46	45	37	5	3	0	0	0	0	0	0	519.	24
23	0	0	0	0	0	0	0	1	15	135	161	570	1256	1372	1198	907	497	97	0	0	0	0	0	0	8208.	24
24	0	0	0	0	0	0	0	3	231%	640	994	1225	1334	1303	1136	857	456	65	0	0	0	0	0	0	8243.	24
25	0	0	0	0	0	0	0	2	86	249	323	575	829	552	355	428	160	20	0	0	0	0	0	0	3379.	24
26	0	0	0	0	0	0	0	1	11	53	110	228	102	90	111	82	20	3	0	0	0	0	0	0	811.	24
27	0	0	0	0	0	0	0	1	9	48	67	112	108	82	142	57	17	13	0	0	0	0	0	0	653.	24
28	0	0	0	0	0	0	0	2	181	577	890$	1202	1401	1171	1191	869	502	91	0	0	0	0	0	0	8077.	24
29	0	0	0	0	0	0	0	1	29	132	157	411	533	405	650	437	255	37	0	0	0	0	0	0	3046.	24
30	0	0	0	0	0	0	0	8	12	77	195	217	197	227	361	140	150	18	0	0	0	0	0	0	1601.	24
31	0	0	0	0	0	0	0	1	43	334	261	348	751	808	1037	921	494	76	0	0	0	0	0	0	4894.	24
AV	0	0	0	0	0	0	0	2	67$	226$	403	528$	623$	562	523	377	176	23	0	0	0	0	0	0	3513.$	
HR	31	31	31	31	31	31	31	31	30	30	31	30	30	31	31	31	31	31	31	31	31	31	31	31		740

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-77

ATLANTA (GA TECH) YEAR 1980 MONTH 1

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	4	19	93	183	323	266	527	424	449	322	38	0	0	0	0	0	0	2629.	24
2	0	0	0	0	0	0	0	5	96	186	286%	473#	9999#	256	257	191	149	41	0	0	0	0	0	0	2108.	22
3	0	0	0	0	0	0	0	4	154	327	283	247	236	243	211	177	131	34	0	0	0	0	0	0	2046.	24
4	0	0	0	0	0	0	0	4	12	38	80	130	124	137	168	124	38	9	0	0	0	0	0	0	862.	24
5	0	0	0	0	0	0	0	4	40	436	596	594	768	766	478	412	156	40	0	0	0	0	0	0	4287.	24
6	0	0	0	0	0	0	0	4	79	152	181	221	232	230	200	173	118	28	0	0	0	0	0	0	1616.	24
7	0	0	0	0	0	0	0	7	92	227$	362	331	434	383	158	165	80	11	0	0	0	0	0	0	2250.	24
8	0	0	0	0	0	0	0	4	57	150	176	253	236	138	172	100	28	9	0	0	0	0	0	0	1323.	24
9	0	0	0	0	0	0	0	4	12	83	269	333	576	901	618	594	212	36	0	0	0	0	0	0	3636.	24
10	0	0	0	0	0	0	0	4	125	390	689	673	819	835	681	377	182	21	0	0	0	0	0	0	4996.	24
11	0	0	0	0	0	0	0	4	23	94	78	116	105	183	211	244	145	15	0	0	0	0	0	0	1197.	24
12	0	0	0	0	0	0	0	5	147	278	383	605	737	491	530	490	281	50	0	0	0	0	0	0	3995.	24
13	0	0	0	0	0	0	0	4	47	83	130	209	216	403	459	429	103	23	0	0	0	0	0	0	2104.	24
14	0	0	0	0	0	0	0	4	88	369$	649	922	1081	629	480	355	192	41	0	0	0	0	0	0	4790.	24
15	0	0	0	0	0	0	0	6	157	444	480	668	949	1012	1010	564	216	35	0	0	0	0	0	0	5542.	24
16	0	0	0	0	0	0	0	9	226	349	307	281	540	1120	850	744	313	50	0	0	0	0	0	0	4789.	24
17	0	0	0	0	0	0	0	4	12	74	105	116	78	103	119	115	70	17	0	0	0	0	0	0	813.	24
18	0	0	0	0	0	0	0	4	52	330	542	419	382	657	454	179	118	43	0	0	0	0	0	0	3180.	24
19	0	0	0	0	0	0	0	5	72%	108	128	137	200	203	192	155	102	33	0	0	0	0	0	0	1335.	24
20	0	0	0	0	0	0	0	7	88	151	195	527	696	1274	1154	758	321	80	0	0	0	0	0	0	5247.	24
21	0	0	0	0	0	0	0	14	155	381	890	834	968	352	398	330	137	17	0	0	0	0	0	0	4476.	24
22	0	0	0	0	0	0	0	4	44	88	231	309	391	182	182	170	50	11	0	0	0	0	0	0	1660.	24
23	0	0	0	0	0	0	0	4	53	272	322	803	526	282	228	156	114	45	0	0	0	0	0	0	2806.	24
24	0	0	0	0	0	0	0	8	76	131	181%	181	194	192	181	165	141	68	0	0	0	0	0	0	1498.	24
25	0	0	0	0	0	0	0	9	178	465	808	981	1100	969	688	744	353	84	0	0	0	0	0	0	6180.	24
26	0	0	0	0	0	0	0	4	61	161	280	501	282	267	300	234	117	41	0	0	0	0	0	0	2247.	24
27	0	0	0	0	0	0	0	5	49	148	186	270	262	211	312	171	100	71	0	0	0	0	0	0	1785.	24
28	0	0	0	0	0	0	0	13	195	377	421$	465	545	693	536	430	301	101	0	0	0	0	0	0	4075.	24
29	0	0	0	0	0	0	0	6	83	281	339	760	962	761	838	877	471	115	0	0	0	0	0	0	5293.	24
30	0	0	0	0	0	0	0	10	48	170	386	432	405	458	884	312	294	55	0	0	0	0	0	0	3260.	24
31	0	0	0	0	0	0	0	5	109	500	502	629	1158	978	999	604	345	121	1	0	0	0	0	0	5949.	24
AV	0	0	0	0	0	0	0	6	85	237	336	449$	515$	510	457	348	184	45	0	0	0	0	0	0	3171.9	
HR	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31		742

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-78

ATLANTA (GA TECH) YEAR 1980 MONTH 1

LAT. TILTED KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	2	8	70	127	267	226	503	515	587	451	66	0	0	0	0	0	0	2824.	24
2	0	0	0	0	0	0	0	16	803	1842	2657	3166	3373	3240	2806	2161	999	131	0	0	0	0	0	0	21192.	24
3	0	0	0	0	0	0	0	3	598	1509	2632	2984	3219	3166	2794	2106	1143	123	0	0	0	0	0	0	20273.	24
4	0	0	0	0	0	0	0	2	7	34	62	101	96	112	143	97	22	4	0	0	0	0	0	0	680.	24
5	0	0	0	0	0	0	0	2	22	539	807	560	719	825	433	387	136	39	0	0	0	0	0	0	4467.	24
6	0	0	0	0	0	0	0	21	818	1862	2661	3178	3418	3336	2917	2238	1309	250	0	0	0	0	0	0	22007.	24
7	0	0	0	0	0	0	0	5	80	191$	302	282	374	324	115	121	51	5	0	0	0	0	0	0	1849.	24
8	0	0	0	0	0	0	0	2	38	115	136	205	193	111	146	79	16	5	0	0	0	0	0	0	1047.	24
9	0	0	0	0	0	0	0	2	6	58	221	275	496	920	561	764	180	17	0	0	0	0	0	0	3499.	24
10	0	0	0	0	0	0	0	2	95	343	627	808	883	792	640	320	147	12	0	0	0	0	0	0	4670.	24
11	0	0	0	0	0	0	0	2	11	60	53	103	94	146	193	209	117	6	0	0	0	0	0	0	993.	24
12	0	0	0	0	0	0	0	10	151	243	359	529	626	422	480	467	274	41	0	0	0	0	0	0	3582.	24
13	0	0	0	0	0	0	0	2	27	53	94	165	170	347	388	366	75	13	0	0	0	0	0	0	1698.	24
14	0	0	0	0	0	0	0	2	64	312$	559	1030%	1511%	526	398	292	147	23	0	0	0	0	0	0	4864.	24
15	0	0	0	0	0	0	0	2	122	1232$	2341	2684%	3052%	2374	1180	531	167	15	0	0	0	0	0	0	13701.	24
16	0	0	0	0	0	0	0	6	573	1584	2512	3129	3283%	2317%	2244%	1093	262	24	0	0	0	0	0	0	17028.	24
17	0	0	0	0	0	0	0	2	6	57	80	100	64	63	103	97	45	8	0	0	0	0	0	0	647.	24
18	0	0	0	0	0	0	0	2	36	298	822	936	3253	2682	2878	2238	1487	427	0	0	0	0	0	0	15060.	24
19	0	0	0	0	0	0	0	17	814	1957	2659	3209	3424	3342	2952	2286	1433	385	0	0	0	0	0	0	22459.	24
20	0	0	0	0	0	0	0	19	801	1787	2577	3048	3236	1510%	2258%	927	298	51	0	0	0	0	0	0	16512.	24
21	0	0	0	0	0	0	0	10	141	380	1132	749	1035	309	350	256	89	8	0	0	0	0	0	0	4455.	24
22	0	0	0	0	0	0	0	2	28	54	190	248	333	145	142	127	32	6	0	0	0	0	0	0	1308.	24
23	0	0	0	0	0	0	0	2	33	232	273	1159	3176	3593	3188	2549	1638	523	0	0	0	0	0	0	16366.	24
24	0	0	0	0	0	0	0	30	923	1914	2717	3257	3537	3483	3108	2474	1551	406	0	0	0	0	0	0	23399.	24
25	0	0	0	0	0	0	0	11	183	456	553	1042	1119	1008	817	806	285	51	0	0	0	0	0	0	6133.	24
26	0	0	0	0	0	0	0	2	32	112	226	422	229	206	237	180	75	16	0	0	0	0	0	0	1740.	24
27	0	0	0	0	0	0	0	2	31	109	150	216	209	158	239	124	63	47	0	0	0	0	0	0	1349.	24
28	0	0	0	0	0	0	0	13	550	1550	2323$	3097	3495	2892	2993	2250	1455	367	0	0	0	0	0	0	20986.	24
29	0	0	0	0	0	0	0	4	62	244	281	722	910	675	1422	957	528	98	0	0	0	0	0	0	5903.	24
30	0	0	0	0	0	0	0	10	28	136	322	369	337	389	602	257	307	38	0	0	0	0	0	0	2794.	24
31	0	0	0	0	0	0	0	3	92	679	485	555	1363	1074	2351%	2266	1323	186	1	0	0	0	0	0	10377.	24
AV	0	0	0	0	0	0	0	7	232	646	988	1245	1531	1323	1270	856	520	109	0	0	0	0	0	0	8834.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-79

ATLANTA (GA TECH) YEAR 1980 MONTH 1

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	0	1	6	10	21	18	34	26	24	16	2	0	0	0	0	0	0	160.	24
2	0	0	0	0	0	0	0	0	13	40	67	87	85	90	73	49	21	2	0	0	0	0	0	0	538.	24
3	0	0	0	0	0	0	0	0	13	37	63	73	83	80	67	46	21	3	0	0	0	0	0	0	485.	24
4	0	0	0	0	0	0	0	0	1	3	6	9	9	10	11	9	3	0	0	0	0	0	0	0	61.	24
5	0	0	0	0	0	0	0	0	2	25	40	40	47	47	30	25	10	3	0	0	0	0	0	0	269.	24
6	0	0	0	0	0	0	0	0	13	40	67	87	96	93	78	51	24	4	0	0	0	0	0	0	551.	24
7	0	0	0	0	0	0	0	0	5	14$	23	22	30	27	12	12	6	1	0	0	0	0	0	0	151.	24
8	0	0	0	0	0	0	0	0	3	10	12	17	16	10	12	7	2	0	0	0	0	0	0	0	90.	24
9	0	0	0	0	0	0	0	0	2	6	17	22	37	56	36	36	14	2	0	0	0	0	0	0	228.	24
10	0	0	0	0	0	0	0	0	10	25	42	53	51	52	43	24	11	1	0	0	0	0	0	0	312.	24
11	0	0	0	0	0	0	0	0	1	6	6	9	9	13	15	16	10	1	0	0	0	0	0	0	86.	24
12	0	0	0	0	0	0	0	0	8	17	25	39	47	32	33	29	18	4	0	0	0	0	0	0	252.	24
13	0	0	0	0	0	0	0	0	3	6	10	15	16	27	30	26	7	1	0	0	0	0	0	0	141.	24
14	0	0	0	0	0	0	0	0	5	21$	38	59	73	41	31	23	13	3	0	0	0	0	0	0	307.	24
15	0	0	0	0	0	0	0	0	8	32	87	84	97	83	55	34	15	2	0	0	0	0	0	0	478.	24
16	0	0	0	0	0	0	0	1	14	40	68	90	99	84	74	45	21	3	0	0	0	0	0	0	540.	24
17	0	0	0	0	0	0	0	0	1	6	8	9	7	9	9	9	5	1	0	0	0	0	0	0	63.	24
18	0	0	0	0	0	0	0	0	3	21	41	45	101	87	80	57	30	7	0	0	0	0	0	0	472.	24
19	0	0	0	0	0	0	0	0	15	43%	69	91	99	94	76	54	28	7	0	0	0	0	0	0	579.	24
20	0	0	0	0	0	0	0	1	14	41	66	89	100	72	75	44	23	6	0	0	0	0	0	0	534.	24
21	0	0	0	0	0	0	0	0	6	25	54	52	60	24	26	23	9	2	0	0	0	0	0	0	281.	24
22	0	0	0	0	0	0	0	0	3	6	16	22	28	14	14	13	4	1	0	0	0	0	0	0	122.	24
23	0	0	0	0	0	0	0	0	4	16	20	58	103	107	91	64	33	7	0	0	0	0	0	0	503.	24
24	0	0	0	0	0	0	0	0	16	46	76	99	110	108	91	66	35	9	0	0	0	0	0	0	656.	24
25	0	0	0	0	0	0	0	0	10	27	38	59	65	59	42	44	21	6	0	0	0	0	0	0	369.	24
26	0	0	0	0	0	0	0	0	4	11	20	34	21	20	22	16	6	2	0	0	0	0	0	0	159.	24
27	0	0	0	0	0	0	0	0	3	11	14	19	19	15	22	12	8	4	0	0	0	0	0	0	124.	24
28	0	0	0	0	0	0	0	1	15	42	68$	93	109	97	91	64	35	9	0	0	0	0	0	0	623.	24
29	0	0	0	0	0	0	0	0	4	18	23	48	58	48	61	47	27	8	0	0	0	0	0	0	341.	24
30	0	0	0	0	0	0	0	0	3	11	27	30	26	32	43	21	18	3	0	0	0	0	0	0	216.	24
31	0	0	0	0	0	0	0	0	7	33	32	40	74	62	82	65	35	7	0	0	0	0	0	0	436.	24
AV	0	0	0	0	0	0	0	0	7	22	37	49	58	52	47	34	17	4	0	0	0	0	0	0	327.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-80

ATLANTA (GA TECH) YEAR 1980 MONTH 1

AVAILABLE SUNSHINE %

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	12	16	0	0	0	0	0	0	0	4.	24
2	0	0	0	0	0	0	0	0	92	100	100	100	100	100	100	100	100	0	0	0	0	0	0	0	91.	24
3	0	0	0	0	0	0	0	0	57	95	100	100	100	100	100	100	100	0	0	0	0	0	0	0	87.	24
4	0	0	0	0	0	0	0	0#	0	0	0	0	0	0	0	0	0	0#	0	0	0	0	0	0	0.	24
5	0	0	0	0	0	0	0	0	0	9	12	0	0	3	0	0	0	0	0	0	0	0	0	0	2.	24
6	0	0	0	0	0	0	0	92	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	0	93.	24
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	1.	24
10	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0.	24
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
12	0	0	0	0	0	0	0	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.	24
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
14	0	0	0	0	0	0	0	0	0	0	0	2	19	0	0	0	0	0	0	0	0	0	0	0	2.	24
15	0	0	0	0	0	0	0	0	0	2	82	81	98	51	5	0	0	0	0	0	0	0	0	0	32.	24
16	0	0	0	0	0	0	0	46	82	100	100	100	98	59	72	29	0	0	0	0	0	0	0	0	63.	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
18	0	0	0	0	0	0	0	0	0	1	15	18%	93%	70	90	95	100	0	0	0	0	0	0	0	48.	24
19	0	0	0	0	0	0	0	86	100%	100%	100%	100%	100	100	100	100	100	0	0	0	0	0	0	0	92.	24
20	0	0	0	0	0	0	0	40	100	100	100	98	89	3	48	4	0	0	0	0	0	0	0	0	55.	24
21	0	0	0	0	0	0	0	0	0	0	14	0	5	0	0	0	0	0	0	0	0	0	0	0	2.	24
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
23	0	0	0	0	0	0	0	0	0	0	0	14	84	100	100	100	100	0	0	0	0	0	0	0	49.	24
24	0	0	0	0	0	0	0	75	100%	100%	100	100	99	100	100	100	100	86	0	0	0	0	0	0	88.	24
25	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	1.	24
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
28	0	0	0	0	0	0	0	0	50	99	100	100	100	100	100	100	100	45	0	0	0	0	0	0	87.	24
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	11	2	0	0	0	0	0	0	0	4.	24
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0.	24
31	0	0	0	0	0	0	0	0	1	12	2	0	7	4	52	81	73	10	0	0	0	0	0	0	23.	24
AV	0	0	0	0	0	0	0	12	21	27	28	29	35	29	32	30	29	8	0	0	0	0	0	0	28.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
@ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

95% ERROR IN MONTHLY AVG:
DAILY AVG = 27%

TABLE A-81

ATLANTA (GA TECH) YEAR 1980 MONTH 2

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	90%	2079	2854	3267	3415	3491	3445	3252	3047	2572	1435	16	0	0	0	0	0	28965.	24
2	0	0	0	0	0	0	0	98%	2242	3007	3336	3453	3287	2927	2604	1850	1284	364	5	0	0	0	0	0	24456.	24
3	0	0	0	0	0	0	0	1	1952	2863	3186	3201	279	49	2135	2980	2441	908	0	0	0	0	0	0	19994.	24
4	0	0	0	0	0	0	0	20%	2121	3046	3308$	3570	3612	3549	3406	3137	2716	1615	32	0	0	0	0	0	30131.	24
5	0	0	0	0	0	0	0	1	3	17	31	55	201	2	2	2	2	2	0	0	0	0	0	0	319.	24
6	0	0	0	0	0	0	0	1	2	2	3	2	3	2	2	5	15	2	0	0	0	0	0	0	42.	24
7	0	0	0	0	0	0	0	1	1525	2479	2895	3141	3180	3153	3008	2689	2288	1220	23	0	0	0	0	0	25583.	24
8	0	0	0	0	0	0	0	1	7	24	37	2	2	2	2	2	2	2	1	0	0	0	0	0	85.	24
9	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	1	0	0	0	0	0	24.	24
10	0	0	0	0	0	0	0	1	2	2	41	608	1599	87	142	489	144	749	44	0	0	0	0	0	3907.	24
11	0	0	0	0	0	0	0	4	1075$	2145	2837	2917	2504	807	189	304	361	127	1	0	0	0	0	0	13071.	24
12	0	0	0	0	0	0	0	22	772	1162	441	1223	1671	2152	3002	2919	2404	918	3	0	0	0	0	0	16691.	24
13	0	0	0	0	0	0	0	5	165	1046	566	794	471	583	83	268	79	4	88	0	0	0	0	0	4149.	24
14	0	0	0	0	0	0	0	291%	2232	3006	3060	3141	3367	3433	3180$	2928	2405	1443	98	0	0	0	0	0	28583.	24
15	0	0	0	0	0	0	0	2	399	1666	984	2152	2341	2621	1045	41	3	3	1	0	0	0	0	0	11439.	24
16	0	0	0	0	0	0	0	2	3	3	3	3	3	3	3	3	3	3	1	0	0	0	0	0	30.	24
17	0	0	0	0	0	0	0	466%	2395	3143	3443	3596	3652	3821	3545	3376	3023	2171	310%	0	0	0	0	0	32739.	24
18	0	0	0	0	0	0	0	1277$	2554	3170	3415	3547	3578	3505	3426	3201	2878	1875	52	0	0	0	0	0	32079.	24
19	0	0	0	0	0	0	0	65	6	2129	1714	193	65	70	3	454	324	3	1	0	0	0	0	0	5025.	24
20	0	0	0	0	0	0	0	2	2	2	2	3	3	3	2	2	2	2	1	0	0	0	0	0	28.	24
21	0	0	0	0	0	0	0	2	2	3	3	11	3	3	3	3	3	3	1	0	0	0	0	0	40.	24
22	0	0	0	0	0	0	0	3	3	71	750	782	128	8	3	5	8	3	2	0	0	0	0	0	1761.	24
23	0	0	0	0	0	0	0	2	668	2259	2813	2995	3153	3072	3039	2827	2292	1391	46	0	0	0	0	0	24356.	24
24	0	0	0	0	0	0	0	367%	1824	2624	2784	2805	3102	3149	3066	2831	2568	1011	7	0	0	0	0	0	26139.	24
25	0	0	0	0	0	0	0	843$	1686	2774	3140	3316	3491	3498	3431	2492	2097	577	1	0	0	0	0	0	27344.	24
26	0	0	0	0	0	0	0	1005%	2598	3156	3475	3638	3703	3712	3619	3427	3133	2408	499%	0	0	0	0	0	34372.	24
27	0	0	0	0	0	0	0	782%	2380	3017	3302	3450	3490	3498	3434	3077	2869	1985	338%	0	0	0	0	0	31423.	24
28	0	0	0	0	0	0	0	4	2049	2869	3085	3181	3252	3247	3054	2875	2402	1359	194	0	0	0	0	0	27530.	24
29	0	0	0	0	0	0	0	40	1072	1735	2198	2099	1878	1270	2408	2034	2538	1389	15	0	0	0	0	0	18675.	24
AV	0	0	0	0	0	0	0	186	1097	1734	1858	1975	1914	1782	1762	1823	1394	785	61	0	0	0	0	0	16172.	
HR	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29		696

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-82

ATLANTA (GA TECH) YEAR 1980 MONTH 2

DIRECT (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	54%	1063$	2072	2265	2322	2353	2340	2252	2175	1957	1247	16	0	0	0	0	0	20116.	24
2	0	0	0	0	0	0	0	89%	1761	2127	2267	2317	2202	1962	1745	1257	926	289	5	0	0	0	0	0	18947.	24
3	0	0	0	0	0	0	0	3	1478	1974	2125	2118	168	28	1436	2090	1834	774	1	0	0	0	0	0	14028.	24
4	0	0	0	0	0	0	0	21%	1665	2138	2262$	2387	2405	2373	2310	2198	2012	1376	34	0	0	0	0	0	21181.	24
5	0	0	0	0	0	0	0	3	7	16	24	39	126	6	6	6	8	8	1	0	0	0	0	0	246.	24
6	0	0	0	0	0	0	0	3	6	6	7	6	6	8	6	8	17	6	1	0	0	0	0	0	79.	24
7	0	0	0	0	0	0	0	3	1285	1861	2053	2165	2182	2169	2105	1957	1745	1076	26	0	0	0	0	0	18625.	24
8	0	0	0	0	0	0	0	3	11	23	31	6	6	6	6	6	8	8	1	0	0	0	0	0	111.	24
9	0	0	0	0	0	0	0	3	6	6	6	6	6	6	6	6	6	6	1	0	0	0	0	0	64.	24
10	0	0	0	0	0	0	0	3	6	6	32	425	1126	62	101	380	121	702	47	0	0	0	0	0	3011.	24
11	0	0	0	0	0	0	0	6	787$	1569	1822	1954	1656	523	120	205	263	104	2	0	0	0	0	0	9011.	24
12	0	0	0	0	0	0	0	22	574	788	265	781	1057	1398	2025	2028	1776	762	5	0	0	0	0	0	11481.	24
13	0	0	0	0	0	0	0	6	113	713	363	505	294	371	52	187	60	8	86	0	0	0	0	0	2758.	24
14	0	0	0	0	0	0	0	265%	1670	2066	2074	2176$	2279	2259	2178$	2097	1839	1252	102	0	0	0	0	0	20258.	24
15	0	0	0	0	0	0	0	4	282	1089	603	1399	1528	1877	697	33	7	7	3	0	0	0	0	0	7530.	24
16	0	0	0	0	0	0	0	4	7	7	6	6	7	6	6	6	6	6	2	0	0	0	0	0	71.	24
17	0	0	0	0	0	0	0	398%	1785	2164	2292	2363	2390	2376	2360	2310	2173	1758	298%	0	0	0	0	0	22868.	24
18	0	0	0	0	0	0	0	981$	1962	2234	2324	2369	2371	2351	2316#	2194#	1870#	1260#	40#	0	0	0	0	0	99999.#	19
19	0	0	0	0	0	0	0	67	7	1463	1130	124	41	45	6	307	229	6	3	0	0	0	0	0	3428.	24
20	0	0	0	0	0	0	0	4	6	6	6	6	6	6	6	6	6	6	3	0	0	0	0	0	69.	24
21	0	0	0	0	0	0	0	4	6	7	6	11	6	6	6	7	7	7	3	0	0	0	0	0	77.	24
22	0	0	0	0	0	0	0	5	7	36	433	506	83	8	7	8	8	7	3	0	0	0	0	0	1112.	24
23	0	0	0	0	0	0	0	5	490	1536	1823	1908	1987	1945	1943	1721	1588	1098	46	0	0	0	0	0	16090.	24
24	0	0	0	0	0	0	0	274	1213	1645	1713	1725	1965	2019	1994	1892	1802	775	10	0	0	0	0	0	17028.	24
25	0	0	0	0	0	0	0	640$	1280	1932	2108	2172	2253	2264	2235	1660	1493	457	3	0	0	0	0	0	18495.	24
26	0	0	0	0	0	0	0	888%	1930	2168	2304	2368	2397	2403	2383	2285	2184	1855	458%	0	0	0	0	0	23584.	24
27	0	0	0	0	0	0	0	687%	1781	2070	2207	2270	2291	2264	2240	2069	1872	1562	318%	0	0	0	0	0	21629.	24
28	0	0	0	0	0	0	0	7	1464	1907	1998	2040	2089	2086	2005	1920	1705	1086	189	0	0	0	0	0	18498.	24
29	0	0	0	0	0	0	0	42	804	1211	1472	1372	1209	811	1566	1353	1783	1098	18	0	0	0	0	0	12738.	24
AV	0	0	0	0	0	0	0	154	809	1201	1242	1305	1258	1172	1135$	1078$	980$	819$	80$	0	0	0	0	0	11014.$	
HR	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	28	28	28	28	29	29	29	29	29		691

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-83

ATLANTA (GA TECH) YEAR 1980 MONTH 2

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	9	426	1143	1786	2206	2430	2402	2120	1620	930	251	0	0	0	0	0	0	15324.	24
2	0	0	0	0	0	0	0	12	486	1131	1750	2158	2314	2222	1930	1489	788	183	0	0	0	0	0	0	14444.	24
3	0	0	0	0	0	0	0	4	416	1102	1730	2106	1682	1452	1859	1544	873	200	1	0	0	0	0	0	12970.	24
4	0	0	0	0	0	0	0	6	437	1166	1714$	2261	2485	2438	2143	1634	954	267	1	0	0	0	0	0	15504.	24
5	0	0	0	0	0	0	0	10	190	486	836	947	1456	675	539	189	226	20	1	0	0	0	0	0	5774.	24
6	0	0	0	0	0	0	0	2	26	114	344%	614	918	287	199	214	283	58	1	0	0	0	0	0	3058.	24
7	0	0	0	0	0	0	0	13	437	1137	1761	2209	2425	2384	2096	1576	936	275	1	0	0	0	0	0	15248.	24
8	0	0	0	0	0	0	0	12	247	586	748	502	667	559	530	438	200	32	1	0	0	0	0	0	4522.	24
9	0	0	0	0	0	0	0	2	8	62	165	137	145	153	159	123	59	9	1	0	0	0	0	0	1021.	24
10	0	0	0	0	0	0	0	2	137	343	877	1883	2461	1578	1434	1127	550	331	4	0	0	0	0	0	10725.	24
11	0	0	0	0	0	0	0	19	666$	1313	1840	2251	2304	1758	1311	1095	738	245	2	0	0	0	0	0	13543.	24
12	0	0	0	0	0	0	0	35	388	882	1336	1749	2146	2220	2194	1745	1076	300	4	0	0	0	0	0	14073.	24
13	0	0	0	0	0	0	0	22	365	1068	1308	1718	1608	1728	1146	989	589	177	7	0	0	0	0	0	10726.	24
14	0	0	0	0	0	0	0	24	544	1259	1786	2209	2492	2496	2079$	1662	983	306	2	0	0	0	0	0	15844.	24
15	0	0	0	0	0	0	0	41	359	1095	1502	2123	2340	2368	1567	767	326	155	2	0	0	0	0	0	12642.	24
16	0	0	0	0	0	0	0	3	105	311	142	291	596	454	323	349	352	109	5	0	0	0	0	0	3038.	24
17	0	0	0	0	0	0	0	50	615	1390	2030	2499	2731	2693	2420	1922	1223	451	14	0	0	0	0	0	18037.	24
18	0	0	0	0	0	0	0	317$	634	1388	2023	2483	2704	2660	2372	1856	1142	410	7	0	0	0	0	0	17998.	24
19	0	0	0	0	0	0	0	24	319	1261	1788	1251	1395	1358	855	1214	684	123	7	0	0	0	0	0	10281.	24
20	0	0	0	0	0	0	0	3	43	200	214	386	573	656	528	278	299	71	4	0	0	0	0	0	3255.	24
21	0	0	0	0	0	0	0	21	128	498	759	874	534	484	377	204	139	59	2	0	0	0	0	0	4079.	24
22	0	0	0	0	0	0	0	3	86	394	1293	1811	1140	886	528	668	336	100	2	0	0	0	0	0	7245.	24
23	0	0	0	0	0	0	0	40	503	1284	1919	2360	2607	2573	2337	1764	1140	443	10	0	0	0	0	0	16980.	24
24	0	0	0	0	0	0	0	79	638	1384	1946	2367	2685	2661	2332	1828	1219	373	6	0	0	0	0	0	17499.	24
25	0	0	0	0	0	0	0	317$	635	1465	2111	2566	2827	2805	2519	1702	1195	308	14	0	0	0	0	0	18462.	24
26	0	0	0	0	0	0	0	122	780	1558	2220	2696	2931	2911	2606	2077	1375	573	33	0	0	0	0	0	19882.	24
27	0	0	0	0	0	0	0	108	734	1507	2147	2622	2849	2817	2541	1953	1319	543	28	0	0	0	0	0	19169.	24
28	0	0	0	0	0	0	0	44	682	1473	2070	2505	2740	2725	2396	1913	1231	440	31	0	0	0	0	0	18248.	24
29	0	0	0	0	0	0	0	61	654	1329	1943	2338	2553	2134	2322	1765	1277	468	10	0	0	0	0	0	16874.	24
AV	0	0	0	0	0	0	0	49	403	977	1451	1797	1956	1818	1578	1231	773	251	7	0	0	0	0	0	12292.	
HR	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29		696

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
@ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-84

ATLANTA (GA TECH) YEAR 1980 MONTH 2

GLOBAL (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	6	293	749	1132	1379	1507	1481	1307	1007	587	155	0	0	0	0	0	0	9603.	24
2	0	0	0	0	0	0	0	10	358	749	1131	1376	1454	1378	1182	908	463	98	0	0	0	0	0	0	9105.	24
3	0	0	0	0	0	0	0	1	286	722	1096	1322	1021	869	1145	972	553	115	1	0	0	0	0	0	8103.	24
4	0	0	0	0	0	0	0	2	308	768	1100$	1433	1582	1521	1337	1027	805	184	1	0	0	0	0	0	9826.	24
5	0	0	0	0	0	0	0	8	106	278	461	541	853	487	289	90	114	7	1	0	0	0	0	0	3252.	24
6	0	0	0	0	0	0	0	2	12	81	275%	359	498	127	83	97	138	21	1	0	0	0	0	0	1694.	24
7	0	0	0	0	0	0	0	5	297	749	1121	1384	1505	1478	1300	985	586	182	1	0	0	0	0	0	9570.	24
8	0	0	0	0	0	0	0	8	150	347	431	269	362	297	282	234	100	9	1	0	0	0	0	0	2490.	24
9	0	0	0	0	0	0	0	2	3	6	53	37	41	42	48	33	10	3	1	0	0	0	0	0	278.	24
10	0	0	0	0	0	0	0	2	72	192	512	1148	1520	935	849	689	323	209	1	0	0	0	0	0	6452.	24
11	0	0	0	0	0	0	0	12	395$	777	1153	1408	1421	1082	772	848	435	138	1	0	0	0	0	0	8218.	24
12	0	0	0	0	0	0	0	21	248	549	804	1056	1294	1346	1339	1070	665	170	1	0	0	0	0	0	8561.	24
13	0	0	0	0	0	0	0	14	228	875	799	1050	973	1050	879	589	341	91	3	0	0	0	0	0	8491.	24
14	0	0	0	0	0	0	0	14	369	821	1153	1349$	1544	1522	1280$	1037	815	173	1	0	0	0	0	0	9879.	24
15	0	0	0	0	0	0	0	25	225	692	906	1285	1389	1401	897	411	154	84	2	0	0	0	0	0	7450.	24
16	0	0	0	0	0	0	0	2	37	150	47	133	298	220	155	172	178	45	1	0	0	0	0	0	1440.	24
17	0	0	0	0	0	0	0	35	420	899	1283	1555	1885	1856	1478	1174	752	272	5	0	0	0	0	0	11211.	24
18	0	0	0	0	0	0	0	217$	434	905	1277	1547	1868	1832	1458	1145	702	239	2	0	0	0	0	0	11225.	24
19	0	0	0	0	0	0	0	7	174	782	1075	709	791	783	459	898	381	46	2	0	0	0	0	0	5885.	24
20	0	0	0	0	0	0	0	3	7	77	79	170	283	332	264	121	140	15	2	0	0	0	0	0	1492.	24
21	0	0	0	0	0	0	0	10	55	267	412	463	257	225	184	71	33	11	2	0	0	0	0	0	1969.	24
22	0	0	0	0	0	0	0	3	27	184	731	1026	803%	444%	245	330	151	29	2	0	0	0	0	0	3776.	24
23	0	0	0	0	0	0	0	11	281	774	1144	1391	1520	1491	1350	1008	850	235	4	0	0	0	0	0	9859.	24
24	0	0	0	0	0	0	0	40	389	851	1177	1417	1588	1569	1369	1066	712	187	3	0	0	0	0	0	10364.	24
25	0	0	0	0	0	0	0	197$	395	910	1295	1550	1887	1865	1488	982	898	159	4	0	0	0	0	0	11028.	24
26	0	0	0	0	0	0	0	85	518	989	1367	1685	1798	1775	1588	1285	847	348	15	0	0	0	0	0	12281.	24
27	0	0	0	0	0	0	0	73	479	945	1327	1595	1719	1881	1507	1158	783	313	10	0	0	0	0	0	11589.	24
28	0	0	0	0	0	0	0	13	422	895	1244	1490	1813	1588	1395	1108	716	238	11	0	0	0	0	0	10728.	24
29	0	0	0	0	0	0	0	44	407	817	1188	1412	1624	1262	1377	1040	760	285	3	0	0	0	0	0	10087.	24
AV	0	0	0	0	0	0	0	30	255	607	890	1067	1172	1079	934	729	455	137	3	0	0	0	0	0	7376.	
HR	29	29	29	29	28	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29		696

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
w - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-85

ATLANTA (GA TECH) YEAR 1980 MONTH 2

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	12	111$	209	232	260	288	289	318	256	186	79	1	0	0	0	0	0	2223.	24
2	0	0	0	0	0	0	0	17	94$	172	188	204	280	422	479	647	390	132	2	0	0	0	0	0	3024.	24
3	0	0	0	0	0	0	0	9	89$	168	210	270	1464	1379	664	200	153	73	2	0	0	0	0	0	4681.	24
4	0	0	0	0	0	0	0	10	92	142	182$	183	206	217	216	192	139	61	2	0	0	0	0	0	1623.	24
5	0	0	0	0	0	0	0	13	193	475	794	883	1282	865	545	205	240	35	2	0	0	0	0	0	5531.	24
6	0	0	0	0	0	0	0	6	54	196%	382	671%	896	290	206	220	282	89	3	0	0	0	0	0	3276.	24
7	0	0	0	0	0	0	0	17	161	269	321	339	365	363	348	303	225	104	3	0	0	0	0	0	2818.	24
8	0	0	0	0	0	0	0	17	247	557	705	500	660	558	531	443	213	48	3	0	0	0	0	0	4483.	24
9	0	0	0	0	0	0	0	7	16	70	168	139	147	152	156	123	62	17	3	0	0	0	0	0	1065.	24
10	0	0	0	0	0	0	0	9	151	348	837	1454	1357	1485	1308	885	494	243	7	0	0	0	0	0	8557.	24
11	0	0	0	0	0	0	0	22	236$	455	492	478	846	1210	1172	936	617	231	5	0	0	0	0	0	8503.	24
12	0	0	0	0	0	0	0	37	197	455	1068	949	1009	802	397	316	274	143	8	0	0	0	0	0	5654.	24
13	0	0	0	0	0	0	0	25	320	878	989	1191	1263	1320	1078	858	563	199	10	0	0	0	0	0	8492.	24
14	0	0	0	0	0	0	0	17	105	149	212	263*	249*	237*	244*	231	187	94	3	0	0	0	0	0	99999.*	20
15	0	0	0	0	0	0	0	52	291	439	984	758	770	499	922	762	360	192	11	0	0	0	0	0	6041.	24
16	0	0	0	0	0	0	0	10	126	333	167	300	589	452	328	353	353	117	7	0	0	0	0	0	3134.	24
17	0	0	0	0	0	0	0	18	109	160	189	206	215	220	209	187	146	76	4	0	0	0	0	0	1739.	24
18	0	0	0	0	0	0	0	48$	95	147	185	216	231	244	242	221%	187%	115%	7	0	0	0	0	0	1936.	24
19	0	0	0	0	0	0	0	27	315	352	846	1103	1319	1289	855	966	558	142	12	0	0	0	0	0	7786.	24
20	0	0	0	0	0	0	0	6	60	218	229	397	582	666	544	301	322	94	9	0	0	0	0	0	3428.	24
21	0	0	0	0	0	0	0	32	149	511	767	872	555	507	404	236	170	88	6	0	0	0	0	0	4298.	24
22	0	0	0	0	0	0	0	8	115	380	849	1270	1056	897	553	888	367	135	9	0	0	0	0	0	8325.	24
23	0	0	0	0	0	0	0	82	351	362	382	387	367	411	404	392	311	211	22	0	0	0	0	0	3643.	24
24	0	0	0	0	0	0	0	60	228	291	387	493	441	436	383	323	258	178	18	0	0	0	0	0	3473.	24
25	0	0	0	0	0	0	0	109$	218	292	330	341	305	299	274	332	349	180	19	0	0	0	0	0	3046.	24
26	0	0	0	0	0	0	0	38	152	199	224	232	235	228	217	200	156	91	9	0	0	0	0	0	1981.	24
27	0	0	0	0	0	0	0	43	149	208	248	277	300	283	271	278	283	157	17	0	0	0	0	0	2514.	24
28	0	0	0	0	0	0	0	56	154	222	296	346	359	387	338	305	267	137	19	0	0	0	0	0	2888.	24
29	0	0	0	0	0	0	0	90	371	552	652	901	1178	1171	881	601	247	176	17	0	0	0	0	0	6635.	24
AV	0	0	0	0	0	0	0	30	171	310	485	558$	655$	619$	501$	412	288	125	8	0	0	0	0	0	4142.$	
HR	29	29	29	29	29	29	29	29	29	29	29	28	28	28	28	29	29	29	29	29	29	29	29	29		692

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-86

ATLANTA (GA TECH) YEAR 1980 MONTH 2

LAT. TILTED KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	31	978	2013	2875	3456	3728	3686	3288	2607	1673	605	2	0	0	0	0	0	24942.	24
2	0	0	0	0	0	0	0	32	1062	2022	2851	3411	3585	3408	2953	2239	1248	315	2	0	0	0	0	0	23127.	24
3	0	0	0	0	0	0	0	10	940	1971	2784	3290	2029%	1620%	2060$	2501	1584	455	2	0	0	0	0	0	19246.	24
4	0	0	0	0	0	0	0	14	971	2038	2776$	3513	3777	3717	3308	2605	1701	655	3	0	0	0	0	0	25078.	24
5	0	0	0	0	0	0	0	13	185	466	840	944	1640%	768	475	160	195	22	3	0	0	0	0	0	5710.	24
6	0	0	0	0	0	0	0	7	15	46	149	349	833	251	180	185	267	54	3	0	0	0	0	0	2338.	24
7	0	0	0	0	0	0	0	19	825	1878	2747	3360	3621	3566	3166	2438	1573	569	6	0	0	0	0	0	23768.	24
8	0	0	0	0	0	0	0	13	243	579	736	438	597	499	480	367	170	36	3	0	0	0	0	0	4161.	24
9	0	0	0	0	0	0	0	7	17	88	156	126	137	144	144	113	58	17	3	0	0	0	0	0	991.	24
10	0	0	0	0	0	0	0	7	116	295	888	2394%	3362%	1786%	1824%	1376%	638%	611	12	0	0	0	0	0	13010.	24
11	0	0	0	0	0	0	0	28	982$	1938	2740	3338	3352%	2192%	1390	1205	873	298	4	0	0	0	0	0	18339.	24
12	0	0	0	0	0	0	0	49	625	1334%	1859%	2649#	3442#	3581#	3235	2644	1723	546	9	0	0	0	0	0	99999.#	21
13	0	0	0	0	0	0	0	31	428	1414	1569	2085	1865%	1989	1154	1070	609	163	20	0	0	0	0	0	12395.	24
14	0	0	0	0	0	0	0	65	1048	2046	2725	2853	3215	3277	2886$	2495	1585	620	19	0	0	0	0	0	22856.	24
15	0	0	0	0	0	0	0	49	497	1816	1970%	2930%	3248	3363	2019	743	301	144	5	0	0	0	0	0	16885.	24
16	0	0	0	0	0	0	0	9	98	277	128	264	542	409	300	315	315	96	8	0	0	0	0	0	2763.	24
17	0	0	0	0	0	0	0	139	1126	2157	3033	3604	3897	3837	3477	2832	1915	865	55	0	0	0	0	0	26937.	24
18	0	0	0	0	0	0	0	580$	1160	2143	2990	3549	3825	3759	3394	2716	1757	742	19	0	0	0	0	0	26632.	24
19	0	0	0	0	0	0	0	34	325	1828	2358	1303	1419	1348	781	1359	744	109	10	0	0	0	0	0	11599.	24
20	0	0	0	0	0	0	0	10	35	161	179	329	469	572	461	244	263	67	8	0	0	0	0	0	2819.	24
21	0	0	0	0	0	0	0	23	117	448	688	799	467	420	323	177	127	57	7	0	0	0	0	0	3652.	24
22	0	0	0	0	0	0	0	11	81	432	1661	2207%	1165	775	458	603	299	95	7	0	0	0	0	0	7795.	24
23	0	0	0	0	0	0	0	44	700	1873	2748	3283	3585	3521	3236	2485	1664	704	24	0	0	0	0	0	23868.	24
24	0	0	0	0	0	0	0	144	1023	2022	2773	3251	3634	3631	3211	2570	1789	614	18	0	0	0	0	0	24679.	24
25	0	0	0	0	0	0	0	494$	988	2108	2991	3523	3862	3825	3452	2389	1648	413	13	0	0	0	0	0	25707.	24
26	0	0	0	0	0	0	0	259	1238	2212	3117	3676	3971	3938	3546	2886	1972	950	91	0	0	0	0	0	27858.	24
27	0	0	0	0	0	0	0	217	1154	2128	3003	3565	3843	3797	3430	2691	1820	857	70	0	0	0	0	0	26575.	24
28	0	0	0	0	0	0	0	50	1046	2058	2880	3379	3870	3637	3228	2609	1701	671	61	0	0	0	0	0	24990.	24
29	0	0	0	0	0	0	0	91	862	1762	2590	3046	3147	2588	3080	2327	1778	714	20	0	0	0	0	0	21983.	24
AV	0	0	0	0	0	0	0	86	651	1425	2021	2438$	2589$	2369$	2093	1688	1103	413	17	0	0	0	0	0	16894.$	
HR	29	29	29	29	29	29	29	29	29	29	29	26	26	26	29	29	29	29	29	29	29	29	29	29		693

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-87

ATLANTA (GA TECH) YEAR 1980 MONTH 2

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	1	17	48	80	104	116	114	97	69	37	9	0	0	0	0	0	0	690.	24
2	0	0	0	0	0	0	0	1	17	48	77	99	107	102	89	66	35	10	0	0	0	0	0	0	652.	24
3	0	0	0	0	0	0	0	1	16	48	79	100	88	79	87	65	35	10	0	0	0	0	0	0	608.	24
4	0	0	0	0	0	0	0	1	16	49	77$	104	118	112	95	68	36	11	0	0	0	0	0	0	887.	24
5	0	0	0	0	0	0	0	0	11	28	47	54	79	52	35	13	15	2	0	0	0	0	0	0	337.	24
6	0	0	0	0	0	0	0	0	1	8	33	44	58	21	15	15	18	4	0	0	0	0	0	0	215.	24
7	0	0	0	0	0	0	0	1	18	47	78	102	112	108	91	64	37	11	0	0	0	0	0	0	669.	24
8	0	0	0	0	0	0	0	1	12	32	41	32	41	36	33	29	14	2	0	0	0	0	0	0	273.	24
9	0	0	0	0	0	0	0	0	1	5	13	12	13	13	12	9	5	1	0	0	0	0	0	0	85.	24
10	0	0	0	0	0	0	0	0	9	21	50	94	118	85	77	54	29	12	0	0	0	0	0	0	548.	24
11	0	0	0	0	0	0	0	1	26$	51	81	105	109	89	69	55	38	12	0	0	0	0	0	0	633.	24
12	0	0	0	0	0	0	0	1	19	45	70	90	109	108	100	73	42	13	0	0	0	0	0	0	671.	24
13	0	0	0	0	0	0	0	1	17	48	86	86	83	86	61	49	30	10	0	0	0	0	0	0	638.	24
14	0	0	0	0	0	0	0	2	23	53	73	90	106	108	85$	62	34	12	1	0	0	0	0	0	848.	24
15	0	0	0	0	0	0	0	2	16	47	68	94	107	106	76	42	20	12	1	0	0	0	0	0	593.	24
16	0	0	0	0	0	0	0	0	8	21	12	20	41	31	22	23	22	6	0	0	0	0	0	0	207.	24
17	0	0	0	0	0	0	0	2	25	59	94	120	132	129	112	84	49	17	1	0	0	0	0	0	824.	24
18	0	0	0	0	0	0	0	12$	24	57	89	113	125	120	105	76	44	16	1	0	0	0	0	0	783.	24
19	0	0	0	0	0	0	0	2	20	57	88	72	81	79	54	64	36	9	1	0	0	0	0	0	563.	24
20	0	0	0	0	0	0	0	1	5	15	17	29	41	45	36	21	19	6	1	0	0	0	0	0	235.	24
21	0	0	0	0	0	0	0	1	9	29	46	55	37	35	28	17	13	6	0	0	0	0	0	0	276.	24
22	0	0	0	0	0	0	0	1	8	31	70	95	68	58	37	43	23	8	1	0	0	0	0	0	442.	24
23	0	0	0	0	0	0	0	4	26	59	89	112	125	123	108	79	46	20	2	0	0	0	0	0	794.	24
24	0	0	0	0	0	0	0	6	29	63	94	116	129	128	109	81	50	19	2	0	0	0	0	0	825.	24
25	0	0	0	0	0	0	0	15$	30	68	100	125	140	138	120	83	53	17	1	0	0	0	0	0	887.	24
26	0	0	0	0	0	0	0	4	31	89	105	133	146	144	125	93	57	22	1	0	0	0	0	0	930.	24
27	0	0	0	0	0	0	0	4	31	88	100	126	138	136	119	87	55	22	2	0	0	0	0	0	885.	24
28	0	0	0	0	0	0	0	4	31	66	98	118	130	128	108	83	50	20	2	0	0	0	0	0	837.	24
29	0	0	0	0	0	0	0	5	30	61	93	114	125	110	110	82	53	21	2	0	0	0	0	0	806.	24
AV	0	0	0	0	0	0	0	2	18	45	70	88	97	90	76	57	34	12	1	0	0	0	0	0	591.	
HR	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29		696

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-88

ATLANTA (GA TECH) YEAR 1980 MONTH 2

AVAILABLE SUNSHINE %

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	0	0	10	100	99	100	100	100	100	100	100	100	89	0	0	0	0	0	0	96.	24
2	0	0	0	0	0	0	0	0	100	100	100	100	100	100	100	100	99	22	0	0	0	0	0	0	89.	24
3	0	0	0	0	0	0	0	0	98	100	100	100	14	0	76	100	100	54	0	0	0	0	0	0	71.	24
4	0	0	0	0	0	0	0	10	100	100	100	100	100	100	100	100	100	95	0	0	0	0	0	0	95.	24
5	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	1.	24
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0.	24
7	0	0	0	0	0	0	0	23	92	100	100	100	100	100	100	100	100	87	0	0	0	0	0	0	94.	24
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
10	0	0	0	0	0	0	0	0	0	0	2	32	70	4	5	31	8	69	0	0	0	0	0	0	21.	24
11	0	0	0	0	0	0	0	0	90	100	100	100	97	57	0	13	17	0	0	0	0	0	0	0	54.	24
12	0	0	0	0	0	0	0	0	37	52	19	71	89	85	100	100	100	60	0	0	0	0	0	0	65.	24
13	0	0	0	0	0	0	0	0	2	74	34	42	22	39	0	12	0	0	0	0	0	0	0	0	21.	24
14	0	0	0	0	0	0	0	36	94	100	100	99	100	100	100	100	100	100	0	0	0	0	0	0	94.	24
15	0	0	0	0	0	0	0	0	9	90	47	76	99	100	57	0	0	0	0	0	0	0	0	0	44.	24
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
17	0	0	0	0	0	0	0	50	100	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	95.	24
18	0	0	0	0	0	0	0	32	100	100	100	100	100	100	100	100	100	89	0	0	0	0	0	0	93.	24
19	0	0	0	0	0	0	0	0	0	82	85	12	4	4	0	27	20	0	0	0	0	0	0	0	21.	24
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
22	0	0	0	0	0	0	0	0	0	0	53	57	8	0	0	0	0	0	0	0	0	0	0	0	11.	24
23	0	0	0	0	0	0	0	0	48	99	100	100	100	100	100	100	98	98	0	0	0	0	0	0	85.	24
24	0	0	0	0	0	0	0	27	99	100	100	100	100	100	100	100	100	57	0	0	0	0	0	0	88.	24
25	0	0	0	0	0	0	0	53	86	100	100	99	100	100	100	81	82	30	0	0	0	0	0	0	83.	24
26	0	0	0	0	0	0	0	13	99	99	100	100	100	100	100	100	100	100	0	0	0	0	0	0	90.	24
27	0	0	0	0	0	0	0	51	100	100	100	100	100	100	100	100	99	100	0	0	0	0	0	0	93.	24
28	0	0	0	0	0	0	0	0	87	100	100	100	100	100	100	100	100	84	0	0	0	0	0	0	86.	24
29	0	0	0	0	0	0	0	0	79	100	100	100	100	100	100	100	100	80	0	0	0	0	0	0	85.	24
AV	0	0	0	0	0	0	0	11	52	65	63	65	62	58	56	57	56	45	0	0	0	0	0	0	54.	
HR	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29		696

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
@ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-89

ATLANTA (GA TECH) YEAR 1980 MONTH 3

DIRECT NORMAL KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	2	3	3	3	3	3	2	3	2	3	2	2	0	0	0	0	0	29.	24
2	0	0	0	0	0	0	0	20	21	21	46	39	135	124	34	55	657	783	500%	0	0	0	0	0	2434.	24
3	0	0	0	0	0	0	0	1385	2349%	3314%	3503%	3598%	3641	3608	3562	3418	2784	1998	464%	0	0	0	0	0	33626.	24
4	0	0	0	0	0	0	0	685	2139	2734	2957	3394	3460	3158	2268	2018	492	58	2	0	0	0	0	0	23385.	24
5	0	0	0	0	0	0	0	2	3	2	3	3	3	14	3	4	648	255	94	0	0	0	0	0	1034.	24
6	0	0	0	0	0	0	0	968	2283	3004	3299	3377	3306	3322	3322	3100	2660	1376	26	0	0	0	0	0	30043.	24
7	0	0	0	0	0	0	0	394	140	3	3	5	3	3	3	3	3	8	2	0	0	0	0	0	568.	24
8	0	0	0	0	0	0	0	3	3	3	301	498	586	672	939	924	820	62	3	0	0	0	0	0	4812.	24
9	0	0	0	0	0	0	0	53	500	859	1718	2575	2858	2858	2921	3279	2984	2247	460	0	0	0	0	0	23310.	24
10	0	0	0	0	0	0	0	3	133$	263	2732	3081	3153	3189	3235	3151	2669	2031	495	0	0	0	0	0	24135.	24
11	0	0	0	0	0	0	11	690	714	949	2744	3150	3204	1923	2556	912	112	4	2	0	0	0	0	0	16970.	24
12	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	28.	24
13	0	0	0	0	0	0	0	3	6	7	9	11	9	8	2	2	2	2	2	0	0	0	0	0	63.	24
14	0	0	0	0	0	0	15	748	1669	2574	2516	1967	2236	3430	3431	3040	2105	1965	528	0	0	0	0	0	26465.	24
15	0	0	0	0	0	0	49	1687	2815	3162	3332	3444	3319	3118	3115	2965	1776	2092	479%	0	0	0	0	0	31372.	24
16	0	0	0	0	0	0	11	773	409	1228	1139	1250	1421	888	1342	415	48	4	3	0	0	0	0	0	8929.	24
17	0	0	0	0	0	0	1	2$	3	3	3	3	3	3	3	3	3	3	2	0	0	0	0	0	35.	24
18	0	0	0	0	0	0	24	1624	2791	3254	3490	3589	3641	3633	3559	3425	3164	2568	936	0	0	0	0	0	35698.	24
19	0	0	0	0	0	0	128%	1273	1269	598	1622	1202	931	3	245	3	3	3	2	0	0	0	0	0	7283.	24
20	0	0	0	0	0	0	1	2	2	2	2	2	3	3	3	3	3	3	2	0	0	0	0	0	32.	24
21	0	0	0	0	0	0	1	3	2	450	2259	3003	3480	3440	3402	3308	3046	2504	960	0	0	0	0	0	25857.	24
22	0	0	0	0	0	0	140%	1870	2829	3264	3475	3571	3614	3588	3520	3399	3133	2546	923	0	0	0	0	0	35871.	24
23	0	0	0	0	0	0	13	831	1907	2130	2831	2976	458	3	165	3	27	3	3	0	0	0	0	0	11353.	24
24	0	0	0	0	0	0	1	4$	8	17	28	40	44	39	36	1422	1721	1459	370	0	0	0	0	0	5191.	24
25	0	0	0	0	0	0	26	109	859	2561	2220	801	1313	971	3063	2790	2355	1426	57	0	0	0	0	0	18551.	24
26	0	0	0	0	0	0	1	3	39	133	125	36	137	3	3	3	3	3	3	0	0	0	0	0	492.	24
27	0	0	0	0	0	0	1	24	1327	2081	2373	2598	788	25	59	276	30	3	3	0	0	0	0	0	9568.	24
28	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	29.	24
29	0	0	0	0	0	0	1	3	3	3	3	133	211	183	59	3	3	3	3	0	0	0	0	0	611.	24
30	0	0	0	0	0	0	1	3	3	3	3	3	4	3	116	966	1519	1905	569	0	0	0	0	0	5097.	24
31	0	0	0	0	0	0	182	1289$	2397	2929	3100	3142	3241	3026	2597	2541	1709	394	10	0	0	0	0	0	26558.	24
AV	0	0	0	0	0	0	20	466	865	1146	1479	1533	1458	1330	1406	1337	1112	830	223	0	0	0	0	0	13207.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
* - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-90

ATLANTA (GA TECH) YEAR 1980 MONTH 3

DIRECT (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	5	6	6	6	8	8	6	6	6	6	6	4	0	0	0	0	0	70.	24
2	0	0	0	0	0	0	0	5	6	6	6$	7	42$	78	18	32	504	645	466%	0	0	0	0	0	1814.	24
3	0	0	0	0	0	0	0	1171	1730$	2289%	2351	2381	2390	2370	2357	2302	1947	1552	416%	0	0	0	0	0	23255.	24
4	0	0	0	0	0	0	0	519	1537	1842	1927	2193	2218	2019	1480	1320	326	44	4	0	0	0	0	0	15407.	24
5	0	0	0	0	0	0	0	6	6	6	8	6	6	10	6	6	464	186	87	0	0	0	0	0	795.	24
6	0	0	0	0	0	0	0	835	1707	2082	2206	2228	2189	2208	2211	2112	1888	1045	28	0	0	0	0	0	20739.	24
7	0	0	0	0	0	0	0	337	114	6	6	6	6	7	7	7	7	7	4	0	0	0	0	0	514.	24
8	0	0	0	0	0	0	0	6	6	6	187	305	375	432	617	629	807	54	6	0	0	0	0	0	3212.	24
9	0	0	0	0	0	0	0	45	357	554	1092	1849	1830	1829	1887	2163	2042	1700	405	0	0	0	0	0	15552.	24
10	0	0	0	0	0	0	0	6	84$	162	1755	2022	2064	2069	2101	2089	1868	1557	445	0	0	0	0	0	16223.	24
11	0	0	0	0	0	0	9	581	496	814	1773	2009	2043	1203	1839	568	74	7	5	0	0	0	0	0	11001.	24
12	0	0	0	0	0	0	1	6	6	8	6	6	6	6	6	6	6	8	4	0	0	0	0	0	69.	24
13	0	0	0	0	0	0	1	6	6	6	6	6	8	6	8	6	6	6	5	0	0	0	0	0	69.	24
14	0	0	0	0	0	0	7	556	1427	1835	1716	1313	1463	2252	2280	2055	1479	1520	468	0	0	0	0	0	18371.	24
15	0	0	0	0	0	0	48	1372	1982	2110	2178	2231	2148	2022	2039	1992	1225	1596	427%	0	0	0	0	0	21369.	24
16	0	0	0	0	0	0	11	610	267	792	724	790	874	553	847	263	35	7	6	0	0	0	0	0	5781.	24
17	0	0	0	0	0	0	1	4$	6	6	7	7	7	7	7	7	7	7	5	0	0	0	0	0	77.	24
18	0	0	0	0	0	0	2	987	2008	2219	2309	2338	2383	2382	2324	2273	2189	1904	793	0	0	0	0	0	24052.	24
19	0	0	0	0	0	0	116%	991	876	368	1030	755	593	6	182	7	6	7	5	0	0	0	0	0	4922.	24
20	0	0	0	0	0	0	2	6	6	6	6	20	17	8	7	6	6	6	5	0	0	0	0	0	100.	24
21	0	0	0	0	0	0	2	6	7	315	1505	1966	2292	2259	2239	2204	2101	1871	828	0	0	0	0	0	17592.	24
22	0	0	0	0	0	0	121%	1330	1692	1884	2091	2237	2311	2318	2297	2258	2149	1884	798	0	0	0	0	0	23366.	24
23	0	0	0	0	0	0	12#	418#	847#	937#	1317#	1548#	251#	7	103	7	23	7	6	0	0	0	0	0	99999.#	17
24	0	0	0	0	0	0	2	4$	6	6	6	8	6	8	8	871	1141	1038	319	0	0	0	0	0	3420.	24
25	0	0	0	0	0	0	27	76	479	1414	1284	484	845	628	2020	1895	1653	1091	60	0	0	0	0	0	11955.	24
26	0	0	0	0	0	0	3	6	23	86%	68	22	80	7	7	6	6	6	8	0	0	0	0	0	307.	24
27	0	0	0	0	0	0	3	13	350#	916#	1497%	1734	531	21	43	191	26	7	6	0	0	0	0	0	4768.$	22
28	0	0	0	0	0	0	3	6	6	6	6	6	6	6	8	6	6	8	6	0	0	0	0	0	71.	24
29	0	0	0	0	0	0	3	6	6	6	8	84	135	115	42	7	7	7	6	0	0	0	0	0	430.	24
30	0	0	0	0	0	0	3	6	6	6	8	6	8	6	84	601	1008	1358	477	0	0	0	0	0	3558.	24
31	0	0	0	0	0	0	135	932$	1729	1987	2056	2054	2103	1977	1715	1701	1190	302	17	0	0	0	0	0	17899.	24
AV	0	0	0	0	0	0	17$	347$	572$	711$	827$	983$	965$	884	920	880	774	627	197	0	0	0	0	0	8774.$	
HR	31	31	31	31	31	31	30	30	29	29	30	30	30	31	31	31	31	31	31	31	31	31	31	31		735

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-91

ATLANTA (GA TECH) YEAR 1980 MONTH 3

GLOBAL HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	3	25	100	214	181	161	174	70	256	48	4	2	0	0	0	0	0	1237.	24
2	0	0	0	0	0	0	0	12	159	564	1101	1249	1545	1273	843	724	854	409	50	0	0	0	0	0	8783.	24
3	0	0	0	0	0	0	0	113%	782$	1451	2193	2581	2990	2951	2653	2137	1411	589	56	0	0	0	0	0	19906.	24
4	0	0	0	0	0	0	0	146	836	1597	2234	2722	2984	2889	2310	1942	834	319	14	0	0	0	0	0	18826.	24
5	0	0	0	0	0	0	0	30	206	361	578	710	405	553	449	279	913	330	44	0	0	0	0	0	4860.	24
6	0	0	0	0	0	0	0	184	863	1659	2279	2679	2848	2805	2562	2037	1336	509	24	0	0	0	0	0	19784.	24
7	0	0	0	0	0	0	0	173	517	673	793	1158	1036	776	655	37	18	7	3	0	0	0	0	0	5846.	24
8	0	0	0	0	0	0	0	4	6	6	750	1814	1890	1934	1984	1544	1100	329	27	0	0	0	0	0	11389.	24
9	0	0	0	0	0	0	0	136	623	1315	1885	2610	2878	2852	2608	2187	1463	655	55	0	0	0	0	0	19267.	24
10	0	0	0	0	0	0	0	16	304$	593	2164	2676	2911	2917	2664	2159	1407	627	62	0	0	0	0	0	18500.	24
11	0	0	0	0	0	0	0	232	769	1376	2360	2897	3250	2772	2698	1852	881	270	18	0	0	0	0	0	19376.	24
12	0	0	0	0	0	0	0	4	62	82	28	48	80	147	249	344	204	25	3	0	0	0	0	0	1276.	24
13	0	0	0	0	0	0	0	22	166	340	379	492	586	713	805	231	135	43	3	0	0	0	0	0	3919.	24
14	0	0	0	0	0	0	1	264	974	1773	2222	2365	2713	3122	2840	2247	1382	725	91	0	0	0	0	0	20718.	24
15	0	0	0	0	0	0	1	314	1083	1841	2486	2957	3127	3044	2781	2245	1357	766	80	0	0	0	0	0	22083.	24
16	0	0	0	0	0	0	2	341	821	1617	1780	2223	2640	2142	2236	1473	680	209	8	0	0	0	0	0	16174.	24
17	0	0	0	0	0	0	1	31$	62	118	665	413	296	235	103	145	94	82	4	0	0	0	0	0	2249.	24
18	0	0	0	0	0	0	2	366	1173	1940	2596	3066	3294	3236	2925	2369	1649	802	114	0	0	0	0	0	23533.	24
19	0	0	0	0	0	0	7	368	1016	1415	2225	2388	2394	688	1464	504	282	96	4	0	0	0	0	0	12851.	24
20	0	0	0	0	0	0	1	12	53	112	277	338	291	455	597	274	201	106	3	0	0	0	0	0	2719.	24
21	0	0	0	0	0	0	1	26	128	1130	2313	2949	3315	3230	2922	2368	1651	821	131	0	0	0	0	0	20984.	24
22	0	0	0	0	0	0	10	424	1232	2021	2684	3141	3354	3284	2962	2411	1686	837	142	0	0	0	0	0	24186.	24
23	0	0	0	0	0	0	6	367	1184	1860	2545	2976	2033	1012	1615	712	768	227	24	0	0	0	0	0	15329.	24
24	0	0	0	0	0	0	2	40$	79	111	62	200	547	646	946	1800	1392	737	132	0	0	0	0	0	6694.	24
25	0	0	0	0	0	0	5	265	836	1977	2427	2179	2574	2240	2869	2250	1500	899	64	0	0	0	0	0	19885.	24
26	0	0	0	0	0	0	2	79	532	1050	1154	1303	1457	635	326	271	165	76	4	0	0	0	0	0	7054.	24
27	0	0	0	0	0	0	9	262	1096	1867	2465	2954	2263	1616	1557	1454	783	242	4	0	0	0	0	0	16571.	24
28	0	0	0	0	0	0	2	4	78	94	143	129	155	205	193	230	273	102	13	0	0	0	0	0	1821.	24
29	0	0	0	0	0	0	2	130	324	610	852	1769	1810	1790	1296	729	565	218	46	0	0	0	0	0	10139.	24
30	0	0	0	0	0	0	4	37	97	240	419	522	609	419	997	1677	1461	867	127	0	0	0	0	0	7475.	24
31	0	0	0	0	0	0	31	676$	1320	2099	2728	3138	3370	3246	2807	2334	1542	580	97	0	0	0	0	0	23988.	24
AV	0	0	0	0	0	0	3	164	562	1032	1516	1833	1929	1742	1677	1330	904	397	47	0	0	0	0	0	13136.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-92

ATLANTA (GA TECH) YEAR 1980 MONTH 3

GLOBAL (RG630) KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	3	9	32	67	63	58	62	15	100	11	4	2	0	0	0	0	0	447.	24
2	0	0	0	0	0	0	0	5	74	296	598	669	833	696	444	394	499	232	31	0	0	0	0	0	4771.	24
3	0	0	0	0	0	0	0	112	9999#	985#	9999#	1735#	1857	1812	1631	1307	869	357	28	0	0	0	0	0	99999.	#20
4	0	0	0	0	0	0	0	94	540	995	1366	1659	1794	1714	1358	1139	466	165	4	0	0	0	0	0	11293.	24
5	0	0	0	0	0	0	0	8	79	167	297	370	178	275	229	128	525	165	16	0	0	0	0	0	2437.	24
6	0	0	0	0	0	0	0	116	560	1034	1411	1646	1749	1710	1542	1226	799	280	5	0	0	0	0	0	12078.	24
7	0	0	0	0	0	0	0	99	289	364	424	635	553	396	330	11	4	4	3	0	0	0	0	0	3112.	24
8	0	0	0	0	0	0	0	4	4	4	374	1002	1061	1097	1142	870	620	158	7	0	0	0	0	0	6342.	24
9	0	0	0	0	0	0	0	73	388	791	1141	1577	1724	1703	1548	1299	878	383	22	0	0	0	0	0	11507.	24
10	0	0	0	0	0	0	0	6	166$	326	1319	1613	1741	1715	1558	1265	830	366	27	0	0	0	0	0	10932.	24
11	0	0	0	0	0	0	0	149	472	832	1440	1748	1949	1849	1611	1094	509	143	6	0	0	0	0	0	11604.	24
12	0	0	0	0	0	0	0	4#	10#	15#	4#	4#	6#	33#	88#	147#	77#	4#	3#	0	0	0	0	0	99999.	#12
13	0	0	0	0	0	0	0	6	67	163	187	260	312	385	448	109	53	15	3	0	0	0	0	0	2009.	24
14	0	0	0	0	0	0	1	170	620	1110	1365	1428	1635	1874	1699	1341	822	433	47	0	0	0	0	0	12545.	24
15	0	0	0	0	0	0	1	212	703	1144	1519	1785	1881	1815	1653	1332	798	456	39	0	0	0	0	0	13338.	24
16	0	0	0	0	0	0	1	212	484	957	1022	1274	1519	1207	1272	817	359	93	4	0	0	0	0	0	9221.	24
17	0	0	0	0	0	0	1	8$	15	25	318%	175	109%	74	18	27	10	12	3	0	0	0	0	0	797.	24
18	0	0	0	0	0	0	1	227	737	1217	1605	1865	1980	1937	1739	1405	982	475	58	0	0	0	0	0	14228.	24
19	0	0	0	0	0	0	5	239	831	841	1328	1398	1386	351	826	254	135	41	4	0	0	0	0	0	7438.	24
20	0	0	0	0	0	0	1	4	7	27	102	130	102	197	286	119	84	39	4	0	0	0	0	0	1100.	24
21	0	0	0	0	0	0	1	6	54	648	1375	1750	1971	1916	1727	1398	974	484	66	0	0	0	0	0	12367.	24
22	0	0	0	0	0	0	5	279	787	1262	1646	1902	2013	1982	1760	1430	999	493	72	0	0	0	0	0	14608.	24
23	0	0	0	0	0	0	3	230	733	1130	1527	1769	1161	543	909	372	416	105	6	0	0	0	0	0	8902.	24
24	0	0	0	0	0	0	1	12$	23	41#	22#	76#	250	318	507	1028	796	416	61	0	0	0	0	0	99999.	#21
25	0	0	0	0	0	0	3	151	494	1198	1450	1288	1500	1295	1689	1320	878	402	22	0	0	0	0	0	11670.	24
26	0	0	0	0	0	0	2	37	295	598	642	721	820	318	143	112	52	17	4	0	0	0	0	0	3762.	24
27	0	0	0	0	0	0	3	141	664	1121	1468	1735	1289	888	853	810	416	111	4	0	0	0	0	0	9503.	24
28	0	0	0	0	0	0	2#	4#	8#	10#	26#	21#	29#	54#	50#	75#	112#	33#	4#	0	0	0	0	0	99999.	#11
29	0	0	0	0	0	0	2	81	166	326	465	1015	1038	1017	715	385	294	96	16	0	0	0	0	0	5594.	24
30	0	0	0	0	0	0	2	5	18	81	172	227%	276%	178	507%	977	841	498	56	0	0	0	0	0	3838.	24
31	0	0	0	0	0	0	15	412$	809	1268	1635	1861	1979	1901	1634	1352	892	314	42	0	0	0	0	0	14112.	24
AV	0	0	0	0	0	0	0	2$	106$	352$	665$	973$	1188$	1187$	1069$	1027$	808$	545$	233$	23$	0	0	0	0	8169.$	
HR	31	31	31	31	31	31	30	29	28	27	27	27	29	29	29	29	29	29	29	31	31	31	31	31		712

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-93

ATLANTA (GA TECH) YEAR 1980 MONTH 3

DIFFUSE HORIZ. KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	5	46	123	233	196	171	182	79	255	53	6	3	0	0	0	0	0	1353.	24
2	0	0	0	0	0	0	0	15	162	555	1054	1202	1393	1171	806	689	590	244	24	0	0	0	0	0	7905.	24
3	0	0	0	0	0	0	0	28	97$	166	196	203	243	211	196	180	246	166	26	0	0	0	0	0	1955.	24
4	0	0	0	0	0	0	0	86	226	345	424	289	322	480	712	786	602	319	23	0	0	0	0	0	4614.	24
5	0	0	0	0	0	0	0	43	229	378	587	723	422	565	466	305	663	297	52	0	0	0	0	0	4729.	24
6	0	0	0	0	0	0	0	78	204	245	260	277	343	317	279	270	251	187	40	0	0	0	0	0	2750.	24
7	0	0	0	0	0	0	0	137	500	680	799	1147	1037	788	669	71	55	27	4	0	0	0	0	0	5914.	24
8	0	0	0	0	0	0	0	16	16	24	557	1444	1428	1403	1325	1000	771	350	52	0	0	0	0	0	8386.	24
9	0	0	0	0	0	0	0	147	472	880	769	697	630	654	566	275	201	144	30	0	0	0	0	0	5466.	24
10	0	0	0	0	0	0	0	30	247$	464	429	399	435	439	364	296	272	172	37	0	0	0	0	0	3585.	24
11	0	0	0	0	0	0	1	168	559	874	578	527	684	1196	832	1236	823	288	28	0	0	0	0	0	7795.	24
12	0	0	0	0	0	0	1	8	80	101	47	62	90	152	250	344	212	37	5	0	0	0	0	0	1388.	24
13	0	0	0	0	0	0	1	37	183	351	386	502	593	711	801	250	159	67	6	0	0	0	0	0	4047.	24
14	0	0	0	0	0	0	1	164	371	473	592	843	898	394	347	403	455	228	46	0	0	0	0	0	5217.	24
15	0	0	0	0	0	0	1	81	159	228	291	338	460	534	491	387	570	273	51	0	0	0	0	0	3865.	24
16	0	0	0	0	0	0	5	250	874	865	848	1152	1341	1351	1199	1170	686	242	24	0	0	0	0	0	9806.	24
17	0	0	0	0	0	0	1	50$	98	159	686	440	331	271	139	174	123	112	14	0	0	0	0	0	2597.	24
18	0	0	0	0	0	0	4	121	214	257	276	294	298	294	274	245	205	144	40	0	0	0	0	0	2667.	24
19	0	0	0	0	0	0	7	178	581	1067	1112	1398	1581	700	1262	522	303	120	11	0	0	0	0	0	8841.	24
20	0	0	0	0	0	0	2	34	86	141	296	357	310	473	518	302	224	130	8	0	0	0	0	0	2981.	24
21	0	0	0	0	0	0	2	44	139	846	720	553	370	378	341	268	214	147	40	0	0	0	0	0	4063.	24
22	0	0	0	0	0	0	5	105	191	233	262	286	296	297	281	248	207	148	56	0	0	0	0	0	2616.	24
23	0	0	0	0	0	0	6	188	403	590	511	552	1613	1020	1463	729	764	253	40	0	0	0	0	0	8130.	24
24	0	0	0	0	0	0	2	55$	107	137	90	223	560	653	946	947	588	337	108	0	0	0	0	0	4752.	24
25	0	0	0	0	0	0	7	240	467	515	859	1481	1413	1387	516	446	355	293	78	0	0	0	0	0	8056.	24
26	0	0	0	0	0	0	2	86	508	952	1036	1255	1319	648	342	286	180	95	11	0	0	0	0	0	6721.	24
27	0	0	0	0	0	0	12	254	508	624	749	832	1556	1574	1486	1234	767	260	14	0	0	0	0	0	9871.	24
28	0	0	0	0	0	0	2	9	98	114	161	147	173	221	206	243	287	119	26	0	0	0	0	0	1806.	24
29	0	0	0	0	0	0	6	142	335	613	852	1621	1599	1601	1237	745	584	241	63	0	0	0	0	0	9639.	24
30	0	0	0	0	0	0	12	72	133	269	442	544	628	443	923	1058	738	351	90	0	0	0	0	0	5702.	24
31	0	0	0	0	0	0	24	177$	329	378	461	524	535	848	771	646	674	447	112	0	0	0	0	0	5726.	24
AV	0	0	0	0	0	0	3	98	272	440	534	662	744	682	651	516	414	201	37	0	0	0	0	0	5256.	
HR	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		744

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-94

ATLANTA (GA TECH) YEAR 1980 MONTH 3

LAT. TILTED KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	14	30	91	184	181	145	183	74	230	48	18	10	0	0	0	0	0	1185.	24
2	0	0	0	0	0	0	0	25	182	534	1063	1204	1564	1295	782	693	1001	534	108	0	0	0	0	0	8965.	24
3	0	0	0	0	0	0	0	270	1131#	1698#	2877	3658	3938	3868	3507	2869	1909	874	103	0	0	0	0	0	27061.$	22
4	0	0	0	0	0	0	0	228	1154	2141	2999	3587	3861	3704	2906	2341	919	326	18	0	0	0	0	0	24179.	24
5	0	0	0	0	0	0	0	38	199	327	524	631	355	531	371	225	1091	350	61	0	0	0	0	0	4705.	24
6	0	0	0	0	0	0	0	285	1211	2207	3048	3502	3690	3640	3325	2653	1762	703	37	0	0	0	0	0	26063.	24
7	0	0	0	0	0	0	0	232	495	582	688	1042	913	673	581	40	24	19	11	0	0	0	0	0	5300.	24
8	0	0	0	0	0	0	0	16	17	17	845	1995	2038	2208	2333	1844	1288	343	34	0	0	0	0	0	12977.	24
9	0	0	0	0	0	0	0	148	734	1552	2462	3370	3673	3651	3323	2866	1946	931	98	0	0	0	0	0	24754.	24
10	0	0	0	0	0	0	0	22	337$	652	2854	3415	3697	3702	3358	2774	1808	859	103	0	0	0	0	0	23581.	24
11	0	0	0	0	0	0	1	298	881	1552	2931	3606	3924	3376%	3318	2065	871	249	23	0	0	0	0	0	23114.	24
12	0	0	0	0	0	0	2	16	65	85	35	53	78	132	219	297	179	30	12	0	0	0	0	0	1203.	24
13	0	0	0	0	0	0	2	29	150	294	331	428	508	616	710	204	117	44	12	0	0	0	0	0	3444.	24
14	0	0	0	0	0	0	2	322	1201	2201	2815	2949	3395%	3889	3539	2830	1709	923	128	0	0	0	0	0	25901.	24
15	0	0	0	0	0	0	4	427	1390	2311	3102	3669	3897	3776	3383	2791	1634	942	111	0	0	0	0	0	27437.	24
16	0	0	0	0	0	0	4	388	836	1771	2044	2541	3037%	2396	2539	1540	840	184	16	0	0	0	0	0	17937.	24
17	0	0	0	0	0	0	4	32$	60	108	579	364	260	205	96	136	97	85	14	0	0	0	0	0	2035.	24
18	0	0	0	0	0	0	5	456	1430	2382	3198	3741	3995	3929	3537	2863	1971	978	149	0	0	0	0	0	28835.	24
19	0	0	0	0	0	0	9	414	1108	1481	2540	2671	2621	618	1438	424	270	96	15	0	0	0	0	0	13703.	24
20	0	0	0	0	0	0	5	21	54	101	247	299	254	395	521	245	182	100	14	0	0	0	0	0	2437.	24
21	0	0	0	0	0	0	5	32	114	1169	2683	3503	3965	3848	3469	2799	1919	958	151	0	0	0	0	0	24615.	24
22	0	0	0	0	0	0	12	495	1459	2414	3208	3750	3992	3899	3499	2836	1951	970	159	0	0	0	0	0	28645.	24
23	0	0	0	0	0	0	10	401	1378	2173	2984	3531	2062	902	1606	632	703	210	27	0	0	0	0	0	16639.	24
24	0	0	0	0	0	0	6	40$	74	100	59	173	470	556	833	1999	1556	801	135	0	0	0	0	0	6802.	24
25	0	0	0	0	0	0	11	270	921	2281	2802	2342	2837	2494	3359	2601	1700	772	66	0	0	0	0	0	22436.	24
26	0	0	0	0	0	0	7	87	486	984	1068	1213	1424	543	297	240	145	71	15	0	0	0	0	0	6559.	24
27	0	0	0	0	0	0	13	249	1184	2119	2845	3432	2437	1508	1459	1449	697	204	15	0	0	0	0	0	17613.	24
28	0	0	0	0	0	0	7	16	87	81	121	109	135	174	165	200	240	96	22	0	0	0	0	0	1433.	24
29	0	0	0	0	0	0	8	120	288	538	761	1687	1754	1737	1211	653	498	192	45	0	0	0	0	0	9492.	24
30	0	0	0	0	0	0	9	36	85	208	383	455	508	358	932	1756	1542	914	128	0	0	0	0	0	7292.	24
31	0	0	0	0	0	0	32	726	$1420	2349	3105	3583	3859	3684	3186	2580	1833	563	90	0	0	0	0	0	26819.	24
AV	0	0	0	0	0	0	5	198	633$	1159$	1786	2150	2238	2016	1932	1539	1034	482	62	0	0	0	0	0	15211.$	
HR	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31		742

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-95

ATLANTA (GA TECH) YEAR 1980 MONTH 3

ULTRAVIOLET KJ/M2

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTL	HR
1	0	0	0	0	0	0	0	0	3	9	18	16	15	15	6	19	4	1	0	0	0	0	0	0	105.	24
2	0	0	0	0	0	0	0	1	10	36	69	79	93	77	53	43	45	19	1	0	0	0	0	0	526.	24
3	0	0	0	0	0	0	0	6	39M	72M	9999M	134%	145	141	120	93	57	23	2	0	0	0	0	0	99999.M	21
4	0	0	0	0	0	0	0	6	35	70	105	131	144	139	111	89	43	18	1	0	0	0	0	0	894.	24
5	0	0	0	0	0	0	0	3	17	26	35	44	28	34	25	16	42	17	3	0	0	0	0	0	290.	24
6	0	0	0	0	0	0	0	7	36	73	105	124	126	122	110	81	50	23	3	0	0	0	0	0	861.	24
7	0	0	0	0	0	0	0	9	26	39	47	67	62	48	41	8	5	2	0	0	0	0	0	0	351.	24
8	0	0	0	0	0	0	0	1	1	2	45	101	102	96	91	71	49	19	3	0	0	0	0	0	581.	24
9	0	0	0	0	0	0	0	9	33	66	95	128	140	136	122	96	61	27	4	0	0	0	0	0	916.	24
10	0	0	0	0	0	0	0	2	20$	38	101	121	134	137	122	94	58	26	4	0	0	0	0	0	856.	24
11	0	0	0	0	0	0	0	10	36	67	113	142	158	137	127	88	45	16	2	0	0	0	0	0	943.	24
12	0	0	0	0	0	0	0	1	5	7	3	5	8	13	19	25	15	2	0	0	0	0	0	0	104.	24
13	0	0	0	0	0	0	0	2	12	22	24	30	35	40	40	13	8	3	0	0	0	0	0	0	229.	24
14	0	0	0	0	0	0	0	11	41	79	107	119	135	150	131	99	60	29	4	0	0	0	0	0	966.	24
15	0	0	0	0	0	0	0	12	44	80	113	138	146	141	125	96	58	29	5	0	0	0	0	0	988.	24
16	0	0	0	0	0	0	0	13	38	74	93	114	133	112	108	75	39	14	2	0	0	0	0	0	814.	24
17	0	0	0	0	0	0	0	3$	7	12	44	30	23	20	11	14	9	7	1	0	0	0	0	0	182.	24
18	0	0	0	0	0	0	0	15	49	88	124	149	161	156	136	105	68	31	5	0	0	0	0	0	1087.	24
19	0	0	0	0	0	0	0	15	44	70	107	120	121	45	77	33	19	8	1	0	0	0	0	0	661.	24
20	0	0	0	0	0	0	0	2	6	10	22	27	23	33	41	20	15	8	1	0	0	0	0	0	209.	24
21	0	0	0	0	0	0	0	3	9	58	113	147	163	156	137	106	68	32	8	0	0	0	0	0	997.	24
22	0	0	0	0	0	0	0	17	51	91	126	152	163	157	137	106	69	33	6	0	0	0	0	0	1107.	24
23	0	0	0	0	0	0	0	16	50	86	121	143	107	61	85	43	42	15	3	0	0	0	0	0	773.	24
24	0	0	0	0	0	0	0	4$	8	11	8	18	39	44	57	88	62	30	6	0	0	0	0	0	374.	24
25	0	0	0	0	0	0	0	14	43	90	117	113	131	115	132	99	63	30	5	0	0	0	0	0	953.	24
26	0	0	0	0	0	0	0	5	33	58	86	74	79	39	23	19	13	7	1	0	0	0	0	0	419.	24
27	0	0	0	0	0	0	1	14	48	83	114	140	117	89	84	74	44	18	2	0	0	0	0	0	825.	24
28	0	0	0	0	0	0	0	1	7	9	13	13	15	18	16	18	20	8	1	0	0	0	0	0	139.	24
29	0	0	0	0	0	0	0	8	20	38	51	95	93	92	70	43	33	14	4	0	0	0	0	0	563.	24
30	0	0	0	0	0	0	0	5	9	19	31	38	43	31	60	83	63	35	8	0	0	0	0	0	424.	24
31	0	0	0	0	0	0	2	29$	56	96	129	152	164	155	131	104	66	30	7	0	0	0	0	0	1121.	24
AV	0	0	0	0	0	0	0	8	27$	50$	75$	94	98	89	82	63	42	18	3	0	0	0	0	0	649.8	
HR	31	31	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31		741

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
M - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS
OR BY SUMMATIONS HAVING UNAVAILABLE HOURS

TABLE A-96

ATLANTA (GA TECH) YEAR 1980 MONTH 3

AVAILABLE SUNSHINE %

DAY	HOUR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG	HR
1	0	0	0	0	0	0	0	0$	0	0	0	0	0	0	0	0	0	0	0$	0	0	0	0	0	0.	24
2	0	0	0	0	0	0	0	0$	0	0	0	0	0%	5	1	2	34	45	22$	0	0	0	0	0	9.	24
3	0	0	0	0	0	0	0	91#	100#	100%	100%	100%	100	100	100	100	100	100	50$	0	0	0	0	0	100.$	22
4	0	0	0	0	0	0	0	11	99	98	98	100	100	100	89	82	19	0	0	0	0	0	0	0	70.	24
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	15	0	0	0	0	0	0	5.	24
6	0	0	0	0	0	0	0	70	99	100	100	100	100	100	100	100	100	66	0	0	0	0	0	0	90.	24
7	0	0	0	0	0	0	0	23	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.	24
8	0	0	0	0	0	0	0	0	0	0	21	29	39	47	80	69	89	0	0	0	0	0	0	0	31.	24
9	0	0	0	0	0	0	0	0	18	87	96	100	100	100	100	100	100	100	0	0	0	0	0	0	78.	24
10	0	0	0	0	0	0	0	0	0	17	99	100	100	100	99	100	100	100	0	0	0	0	0	0	72.	24
11	0	0	0	0	0	0	0	51	50	85	100	100	100	84	99	40	3	0	0	0	0	0	0	0	59.	24
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
14	0	0	0	0	0	0	0	51	93	99	100	100	100	100	100	100	100	100	0	0	0	0	0	0	89.	24
15	0	0	0	0	0	0	0	92	100	100	100	100	100	100	100	100	88	100	0	0	0	0	0	0	91.	24
16	0	0	0	0	0	0	0	52	29	67	53	49	65	35	58	18	0	0	0	0	0	0	0	0	36.	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
18	0	0	0	0	0	0	0	58	100	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	69.	24
19	0	0	0	0	0	0	0	92	80	28	88	76	58	0	16	0	0	0	0	0	0	0	0	0	36.	24
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
21	0	0	0	0	0	0	0	0	0	16	74	89	99	100	100	100	100	100	0	0	0	0	0	0	65.	24
22	0	0	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	91.	24
23	0	0	0	0	0	0	0	66	100	100	100	100	17	0	13	0	0	0	0	0	0	0	0	0	41.	24
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	77	96	0	0	0	0	0	0	19.	24
25	0	0	0	0	0	0	0	5	38	94	89	52	56	57	100	100	94	79	0	0	0	0	0	0	63.	24
26	0	0	0	0	0	0	0	0	2	7	8	2	8	0	0	0	0	0	0	0	0	0	0	0	2.	24
27	0	0	0	0	0	0	0	1	86	100	100	100	36	0	0	12	0	0	0	0	0	0	0	0	35.	24
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.	24
29	0	0	0	0	0	0	0	0	0	0	0	0	7	4	0	0	0	0	0	0	0	0	0	0	1.	24
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	40	67	97	39	0	0	0	0	0	20.	24
31	0	0	0	0	0	0	0	80	100	100	100	100	100	99	95	99	100	23	0	0	0	0	0	0	80.	24
AV	0	0	0	0	0	0	0	27$	37$	44	52	52	48	43	47	46	45	39	2	0	0	0	0	0	40.$	
HR	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		742

FLAGS:
% - QUESTIONABLE HOURLY VALUE, INCLUDED IN SUMS
# - BAD OR UNAVAILABLE VALUE, NOT INCLUDED IN SUMS
$ - ESTIMATED VALUE, BY INTERPOLATION BETWEEN ADJACENT HOURS OR BY SUMMATIONS HAVING UNAVAILABLE HOURS